West Seattle and Ballard
Link Extensions

Level 2 Alternatives Development and Screening

October 2018

SOUNDTRANSIT

Summary

Introduction

The *Level 2 Alternatives Development and Screening Technical Memorandum* documents the findings of the Level 2 Screening process for the West Seattle and Ballard Link Extensions (WSBLE) Project.

Preliminary Purpose and Need

The purpose of the WSBLE Project is to expand the Link light rail system from downtown Seattle to West Seattle and Ballard and to increase capacity and connectivity for regional connections.

Alternatives Development Process

The alternatives evaluation framework for the WSBLE Project is structured as a series of sequential evaluation levels, where increasingly detailed and comprehensive evaluation measures are applied to a decreasing number of alternatives at each level. Eventually, a Preferred Alternative will be identified by the Sound Transit Board for advancement into the environmental review phase, along with other alternatives to evaluate in an Environmental Impact Statement (EIS).

A variety of stakeholders are engaged in the WSBLE Project, and their input influences the decision-making process as the WSBLE Project advances during the Alternatives Development phase. The agency and external engagement process to actively seek input and involvement from stakeholders is being accomplished through multiple groups and forums, including an Elected Leadership Group (ELG), Stakeholder Advisory Group (SAG), Interagency Group (IAG) and the public.

A total of 28 alternatives were previously studied in Level 1 at a segment level. The Level 1 Screening was intended to screen out those alternatives that had limited potential to meet the Project's preliminary Purpose and Need and/or were deemed not practical. On May 17, 2018, the ELG recommended to carry forward 16 of the Level 1 alternatives into Level 2. Subsequently, on July 17, 2018, the ELG recommended to advance four additional alternatives into Level 2 for the South of Downtown (SODO) and Chinatown/International District Segment.

Level 2 Alternatives Evaluation and Findings

Level 2 also assessed alternatives within each study segment—West Seattle/Duwamish, SODO and Chinatown/International District, Downtown and Interbay/Ballard. The 20 alternatives carried forward from Level 1 were refined and optimized, leading to a total of 24 alternatives studied in Level 2. The Level 2 evaluation applied more quantitative criteria to measure the potential benefits and impacts and highlight differentiating characteristics among the alternatives. As such, the Level 2 Screening identified higher versus lower performing alternatives for each criterion.

Summary of Level 2 Screening Recommendations

Table S-1 (Summary of Elected Leadership Group Level 2 Screening Recommendations) lists the Level 2 alternatives that the ELG recommended be carried forward into the Level 3 Screening on October 5, 2018. The ELG recommended to carry forward 14 of the 24 Level 2 alternatives into Level 3.

Next Steps

As a next step, the Level 3 Screening will develop and evaluate in greater detail those alternatives carried forward from the Level 2 Screening. However, the segment-level alternatives will be pieced together from end-to-end, providing an evaluation of corridorwide alternatives from West Seattle to Ballard.

Table S-1 Summary of Elected Leadership Group Level 2 Screening Recommendations

Segment / Level 2 Alternative	Carry Forward into Level 3	Do Not Carry Forward into Level 3
West Seattle/Duwamish Segment		
ST3 Representative Project	✓	
Pigeon Ridge/West Seattle Tunnel		✓
Oregon Street/Alaska Junction/Elevated		✓
Golf Course/Alaska Junction/Tunnel	✓	
Oregon Street/Alaska Junction/Tunnel		✓
SODO and Chinatown/International District Segment		
ST3 Representative Project	✓	
Massachusetts Tunnel Portal	✓	
Surface E3	✓	
Occidental Avenue		✓
4th Avenue Cut-and-Cover Tunnel/Station	✓	
4th Avenue Bored Tunnel/Mined Station	✓	
5th Avenue Bored Tunnel/Mined Station	✓	
Downtown Segment		
ST3 Representative Project	✓	
5th/Harrison	✓	
6th/Boren/Roy		✓
5th/Terry/Roy/Mercer	✓	
Interbay/Ballard Segment		
ST3 Representative Project	✓	
15th/Fixed Bridge/15th		✓
20th/Fixed Bridge/17th		✓
20th/Tunnel/15th		✓
Central Interbay/Movable Bridge/14th		✓
Armory Way//Tunnel/14th	✓	
Central Interbay/Fixed Bridge/14th	✓	
Central Interbay/Tunnel/15th		✓

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Acronyms and Abbreviations

BNSF	Burlington Northern Santa Fe
CBD	Central Business District
DAHP	Department of Archaeology and Historic Preservation
DSTT	Downtown Seattle Transit Tunnel
EIS	Environmental Impact Statement
ELG	Elected Leadership Group
FTA	Federal Transit Administration
HCT	High-Capacity Transit
IAG	Interagency Group
KCM	King County Metro Transit
LEP	Limited English Proficiency
LRT	Light Rail Transit
MIC	Manufacturing and Industrial Center
N/A	Not Applicable
NRHP	National Register of Historic Places
O&M	Operations and Maintenance
OMF	Operations and Maintenance Facility
PSRC	Puget Sound Regional Council
RTLP	Regional Transit Long-Range Plan
SAG	Stakeholder Advisory Group
SCL	Seattle City Light
SEPA	State Environmental Policy Act
SLU	South Lake Union
SODO	South of Downtown
SR	State Route
ST3	Sound Transit 3
TNC	Transportation Network Companies
TPSS	Traction Power Substations
UPRR	Union Pacific Railroad
WSBLE	West Seattle and Ballard Link Extensions
WSDOT	Washington State Department of Transportation

1 INTRODUCTION

1.1 Overview

Sound Transit is advancing the West Seattle and Ballard Link Extensions (WSBLE) Project through the Alternatives Development phase. During Alternatives Development, Sound Transit is assessing the "representative project" included in the Sound Transit 3 (ST3) Plan, well as other alternatives developed from refining the ST3 Representative Project route, station locations and other project elements based on additional public engagement and technical analysis. The ST3 Representative Project itself is the result of extensive, yearslong planning and public involvement work, including high-capacity transit (HCT) studies, the process to update the agency's long-range plan, and the work that developed the *ST3 Plan* that voters approved financing for in 2016. Sound Transit is engaging the public and agencies in an intensive external engagement process that will lead to the Sound Transit Board identifying a Preferred Alternative, as well as other alternatives to evaluate in an Environmental Impact Statement (EIS).

The WSBLE Project would provide fast, reliable light rail connections to dense residential and job centers throughout the region and add a new downtown Seattle light rail tunnel to provide efficient operating capacity for the entire regional system. It would consist of two separate Link extensions: one to West Seattle and the other to Ballard. The extension to West Seattle would operate from downtown Seattle to West Seattle's Alaska Junction neighborhood. The Ballard extension would operate from downtown Seattle to Ballard's Market Street area and include a new rail-only tunnel from the Chinatown/ International District to South Lake Union and Seattle Center/Uptown.

The alternatives and analysis conducted during the Alternatives Development phase are generally focused within a 0.5-mile study area boundary around the ST3 Representative Project. A map of the study area for the WSBLE Project is shown on **Figure 1-1** (West Seattle and Ballard Link Extensions Study Area).

1.2 Purpose of Report

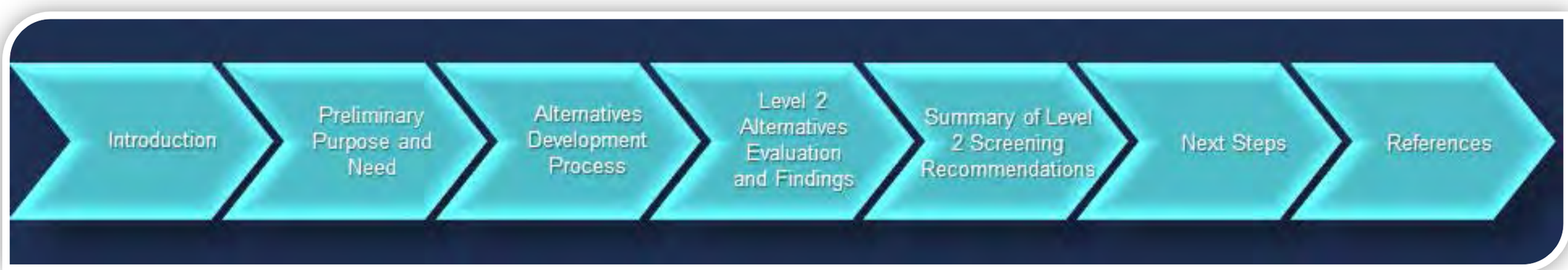
The *Level 2 Alternatives Development and Screening Technical Memorandum* documents the findings of the Level 2 Screening process for the WSBLE Project. This memorandum presents the evaluation criteria, measures and methods used to analyze the Level 2 alternatives, summarizes each alternative's performance relative to the evaluation criteria and measures, and provides conclusions about the alternative's relative performance. The memorandum concludes with identifying the alternatives that the Elected Leadership Group (ELG) recommended to be evaluated further in the Level 3 Screening and those alternatives not carried forward for further study.

Figure 1-1 West Seattle and Ballard Link Extensions Study Area

1.3 Report Organization

The *Level 2 Alternatives Development and Screening Technical Memorandum* is organized into the following sections:

- **Section 1 (Introduction):** Provides an overview of the WSBLE process and project, as well as purpose of this report.
- **Section 2 (Preliminary Purpose and Need):** Outlines the preliminary Purpose and Need for the WSBLE Project.
- **Section 3 (Alternatives Development Process):** Describes an overview of the process to develop, evaluate and screen alternatives, including the agency and community engagement efforts and previous Level 1 Screening.
- **Section 4 (Level 2 Alternatives Evaluation and Findings):** Defines the alternatives within each study segment and highlights the results and findings for each alternative's performance relative to the evaluation criteria and measures.
- **Section 5 (Summary of Level 2 Screening Recommendations):** Summarizes the alternatives to be evaluated in greater detail in the Level 3 Screening, and those alternatives not carried forward for further study.
- **Section 6 (Next Steps):** Addresses the next steps for the Level 3 Screening.
- **Section 7 (References):** Lists the references cited in this report.



2 PRELIMINARY PURPOSE AND NEED

Sound Transit developed the preliminary Purpose and Need Statement for the WSBLE Project with input from stakeholders during the early scoping period between February 2 and March 5, 2018. The preliminary Purpose and Need Statement provides the foundation for the alternatives defined in Level 2, as well as the evaluation criteria, measures and methods used for the Level 2 evaluation and screening.

2.1 Project Purpose

The purpose of the WSBLE Project is to expand the Link light rail system from downtown Seattle to West Seattle and Ballard and to increase capacity and connectivity for regional connections to:

- Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit (LRT) service to communities in the project corridors as defined in ST3.
- Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet the projected transit demand.
- Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and *Sound Transit's Regional Transit Long-Range Plan* (RTLP) (2014).
- Implement a system that is consistent with the *ST3 Plan* (Sound Transit 2016) that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.
- Expand mobility for the corridor and region's residents, which include transit dependent, low-income and minority populations.
- Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.
- Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.

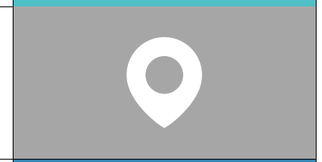
2.2 Need for Proposed Action

The WSBLE Project is needed because:

- Increasing roadway congestion on transit routes between downtown Seattle, West Seattle, and Ballard will continue to degrade transit performance and reliability.
- Regional population and employment growth will increase operational demands on the Downtown Seattle Transit Tunnel (DSTT).
- Regional and local plans call for HCT in the corridor consistent with the Puget Sound Regional Council's (PSRC) *VISION 2040* (2009) and Sound Transit's RTLP (2014).
- The region's citizens and communities, including travel-disadvantaged residents and low-income and minority populations, need long-term regional mobility and multimodal connectivity.
- Regional and local plans call for increased residential and/or employment density at and around HCT stations, and increased options for multimodal access.
- Environmental and sustainability goals of the state and region include reducing total vehicles miles traveled and greenhouse gas emissions.

To help organize the content of this report, the Purpose statements were distilled into short themes that reflect the primary focus of the full statement. Accompanying these brief themes are symbols that generally match the spirit of the summarized Purpose statement, as shown in **Table 2-1** (Level 2 Screening Themes and Symbols). The report uses these themes and symbols to denote these Purpose statements throughout.

Table 2-1 Level 2 Screening Themes and Symbols

Purpose Statement	Theme	Symbol
Provide high quality rapid, reliable, and efficient peak and off-peak LRT service to communities in the project corridors as defined in ST3.	Service performance and reliability in project corridor	
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet the projected transit demand.	Improve downtown capacity for regional connectivity	
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's RTLP.	Connect regional centers	
Implement a system that is consistent with the *ST3 Plan* that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.	Technically feasible and financially sustainable	
Expand mobility for the corridor and region's residents, which include transit dependent, low-income and minority populations.	Expand mobility for all	
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.	Encourage equitable and sustainable urban growth	
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.	Promoting a healthy built, natural and social environment	

3 ALTERNATIVES DEVELOPMENT PROCESS

The alternatives evaluation framework for the WSBLE Project is structured as a series of sequential evaluation levels, where increasingly detailed and comprehensive evaluation measures are applied to a decreasing number of alternatives at each level. The screening process initially reviews a wide range of alternatives during the first screening level, evaluated against a select set of measures to identify fatal flaws or major deficiencies. As the evaluation process progresses, the most suitable alternatives will emerge and be subject to more rigorous and detailed analysis, with more quantitative evaluation criteria applied. The screening process has been designed to provide insight into how the alternatives may be refined or modified to improve their effectiveness in satisfying the preliminary Purpose and Need.

At each screening level, public input from neighborhood forums and station charrettes are incorporated, along with input from the Interagency Group (IAG), Stakeholder Advisory Group (SAG) and ELG. The ELG makes recommendations on the alternatives to carry forward for further study. See **Section 3.3** (Agency and Community Engagement) for a detailed description of the agency and community engagement process. Eventually, a Preferred Alternative will be identified by the Sound Transit Board for advancement into the environmental review phase, along with other alternatives to evaluate in an EIS.

The three levels of analysis for the WSBLE Project are depicted on **Figure 3-1** (Alternatives Development Process). More detailed information on the overall Alternatives Development process can be found in the *Alternatives Evaluation Framework and Methodology Technical Memorandum* (Sound Transit 2018a).

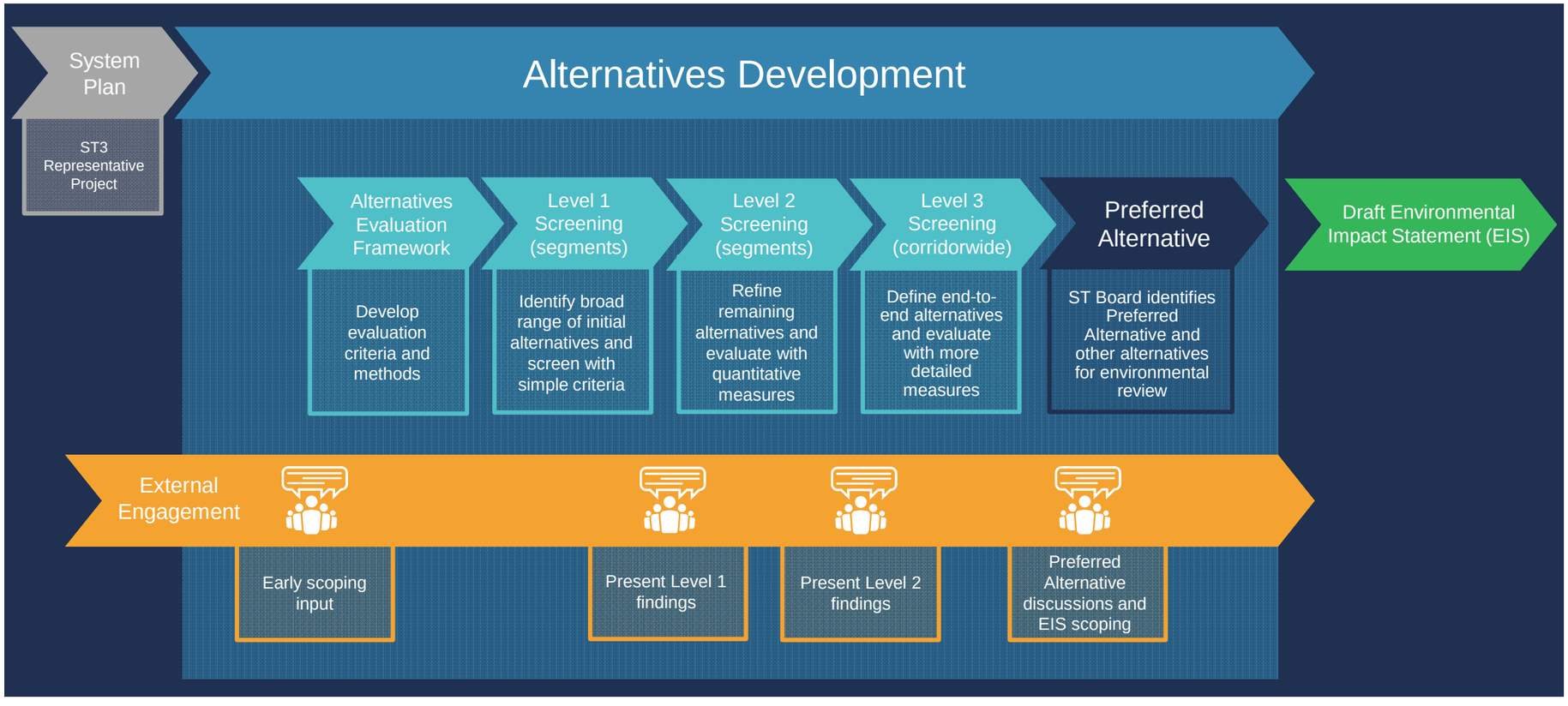


Figure 3-1 Alternatives Development Process

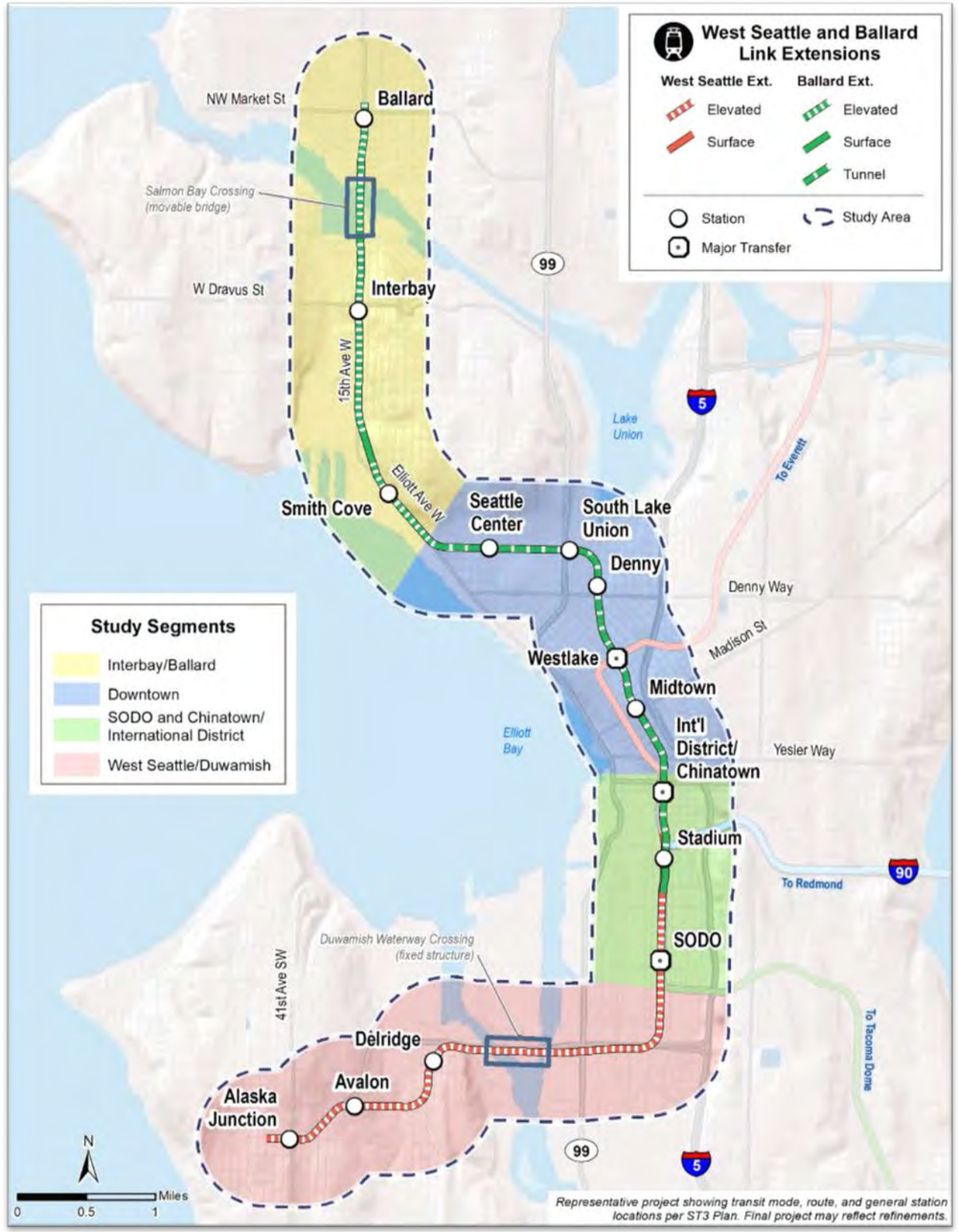


Figure 3-2 Study Segments for Alternatives Development Phase

3.1 Study Segments

Due to the unique characteristics of the study area for the WSBLE Project, the corridor was subdivided into four study segments for evaluation purposes in the Alternatives Development phase. Each study segment is oriented around the ST3 Representative Project and was geographically determined to provide logical end points and interfaces with the adjoining segments. These study segments allow for more detailed evaluation and analysis of specific planning, engineering or other issues. Following are the four study segments, as delineated on **Figure 3-2** (Study Segments for Alternatives Development Phase):

- West Seattle/Duwamish
- South of Downtown (SODO) and Chinatown/International District
- Downtown
- Interbay/Ballard

The first two screening levels were conducted within each of these study segments. After the alternatives are evaluated and screened down at a segment level, they will then be pieced together to define logical end-to-end alternatives from West Seattle to Ballard for Level 3. **Figure 3-3** (Alternatives Screening Process) illustrates the alternatives screening process. The process is designed to help the Sound Transit Board identify a Preferred Alternative and other alternatives to advance into the environmental review phase.

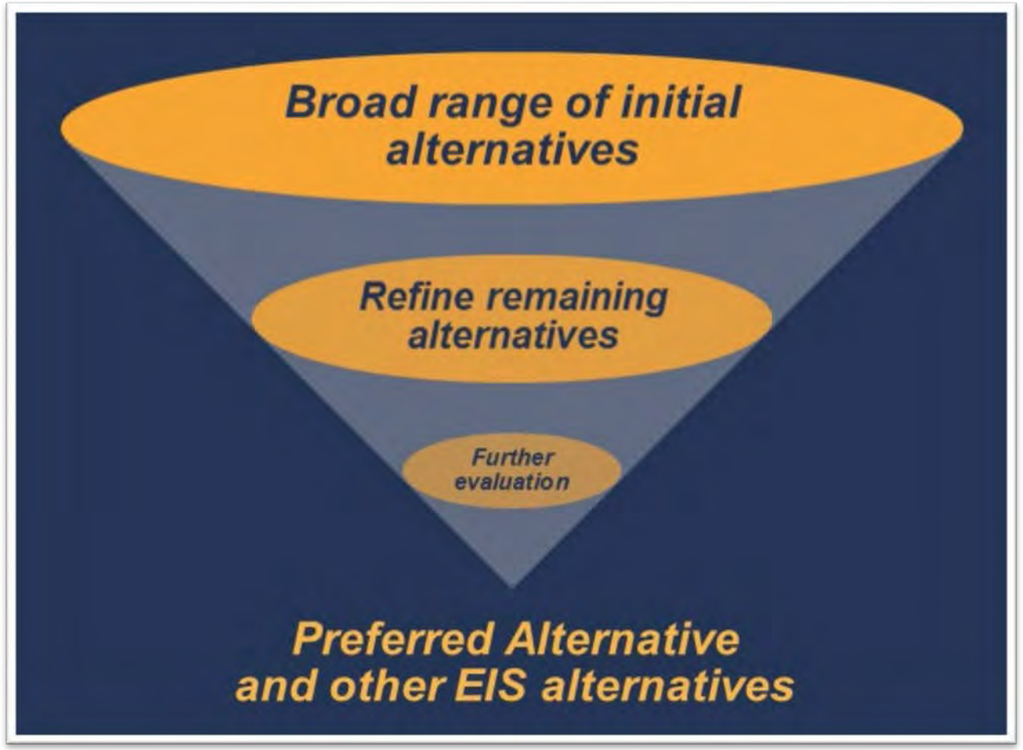


Figure 3-3 Alternatives Screening Process

3.2 Level 2 Screening Process

With a multi-tiered evaluation approach, each level of the screening analysis conforms to a level of detail necessary to make informed decisions about the alternatives considered. In this regard, different and increasingly detailed sets of evaluation criteria, measures and methods are used at each screening level. This approach allows alternatives to be narrowed from a wide range down to a select set of alternatives.

3.2.1 Evaluation Criteria, Measures and Methods

The Level 2 Screening relied on a set of evaluation criteria and measures that provided a consistent means of analysis among the study segments. Sound Transit developed evaluation criteria based on the WSBLE Project's preliminary Purpose and Need. Supporting measures were identified under each criterion. Qualitative and/or quantitative evaluation methods were then specified for each measure. These evaluation criteria, measures and methods were used to assess the performance of alternatives within each study segment for each criterion. **Figure 3-4** (Development of Evaluation Criteria, Measures and Methods) illustrates the relationship between the preliminary Purpose and Need statement and the evaluation criteria, measures and methods.

Figure 3-4 Development of Evaluation Criteria, Measures and Methods

Table 3-2 (Level 2 Screening Evaluation Criteria, Measures and Methods [by segment]) lists the detailed evaluation criteria, measures and methods used to evaluate the alternatives in Level 2. Each criterion has one or more quantitative or qualitative measures to differentiate between alternatives in terms of project performance and potential impacts. The Level 2 Screening process results in alternatives recommended by the ELG to be carried forward for further evaluation in a subsequent Level 3 Screening. In cases where there is not sufficient information to dismiss alternatives from further consideration, the ELG may recommend those alternatives be carried forward into the later screening phases.

3.2.2 Evaluation Rating Thresholds

The alternatives were evaluated and rated against each evaluation criterion and supporting measure, as shown in **Table 3-2**. Evaluation rating thresholds are established for each measure to differentiate higher versus lower performing alternatives within the segment. Three performance rating thresholds are used: High, Medium and Low. Measures are then rated High, Medium, or Low based on their anticipated performance relative to the other alternatives within the segment:

- **High:** Higher performing with respect to measure
- **Medium:** Moderate performing with respect to measure
- **Low:** Lower performing with respect to measure

Appendix A (Level 2 Screening Evaluation Criteria, Measures, Methods and Thresholds) describes the rating thresholds applied under the evaluation criteria, measures, and methods used in the Level 2 screening process. Color coding is also used to help distinguish the High, Medium and Low performance ratings within the evaluation matrices. **Table 3-1** (Alternative Performance Ratings) displays the performance ratings and their corresponding colors.

Table 3-1 Alternative Performance Ratings

Performance Rating	Color
Higher performing rating in comparison to other alternatives within the segment	High
Medium performing rating in comparison to other alternatives within the segment	Medium
Lower performing rating in comparison to other alternatives within the segment	Low

The performance ratings for each evaluation measure are accompanied by quantitative data where applicable. Some evaluation measures and methods are quantitative, while others are qualitative. An evaluation of the alternative also provides an explanation and rationale for the rating given to the measures. The evaluation, data and rationale for each rating give can be found in the detailed evaluation matrices in **Appendix B** (West Seattle/Duwamish Segment Level 2 Evaluation Matrices) through **Appendix E** (Interbay/Ballard Segment Level 2 Evaluation Matrices).

Table 3-2 Level 2 Screening Evaluation Criteria, Measures and Methods (by segment)

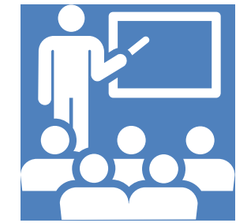
Purpose and Need [1]/ Evaluation Criteria [2]	Measure [3]	Quantitative or Qualitative [4]	Methods [5]
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3			
Reliable Service	Potential service interruptions and recoverability	Qualitative	Likelihood of service interruptions during peak and off-peak travel periods (e.g., frequency and duration of movable bridge openings, at-grade crossings, etc.) and redundancy and ability to reroute service
Travel Times	LRT travel times	Quantitative	Estimated travel times within segments based on alignment characteristics (minutes)
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand			
Regional Connectivity	LRT network integration	Qualitative	Ability to accommodate spine segmentation for regional LRT system connectivity and operational flexibility to meet future demand
Transit Capacity	Passenger carrying capacity in downtown	Qualitative	Combined passenger carrying capacity of downtown transit tunnels
Projected Transit Demand	Ridership potential	Quantitative	Future PSRC forecasted 2040 total population and employment within 10-minute walkshed of WSBLE Project stations
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan			
Regional Centers Served	Station proximity to PSRC-designated regional growth centers	Quantitative	Number of PSRC-designated regional growth centers served by stations
	Station proximity to PSRC-designated manufacturing/industrial centers	Quantitative	Number of PSRC-designated manufacturing/industrial centers served by stations
Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Qualitative	Ability to accommodate expansion potential of future LRT extensions identified in *Sound Transit Regional Transit Long-Range Plan*
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain			
ST3 Consistency	Mode, route and general station locations per ST3	Qualitative	Consistency of mode, route and general station locations per ST3
	Potential ST3 implementation schedule effects	Qualitative	Constructability, environmental or other issues/challenges that may cause WSBLE Project schedule risks (e.g., right-of-way [ROW] acquisition needs, in-water work restrictions, regulatory compliance process, etc.)
	Potential ST3 operating plan effects	Qualitative	Integration of WSBLE Project into existing LRT spine and overall system (i.e., special trackwork, movable bridge implications, etc.)
Technical Feasibility	Engineering constraints	Qualitative	Compliance with *Sound Transit Design Criteria Manual*, design criteria from agencies with jurisdiction and federal regulations, and engineering obstacles associated with major infrastructure constraints
	Constructability issues	Qualitative	Constructability issues based on potential conflicts and technical challenges (e.g., utility conflicts, existing infrastructure, geotechnical, tunnel portals, etc.)
	Operational constraints	Qualitative	Assessment of operational constraints (e.g., access to maintenance facility, vertical grade, horizonal curvature, movable bridge, etc.)
Financial Sustainability	Conceptual capital cost comparison	Quantitative	ST3 cost consistency and conceptual capital cost (includes alignment and stations, but not for items such as rolling stock) comparison based on conceptual design quantities and current Sound Transit unit pricing (2017$)
	Operating cost impacts	Qualitative	Assessment of operations and maintenance (O&M) cost impacts, including annual and lifecycle costs
Expand mobility for the corridor and region's residents, which include transit dependent, low-income and minority populations			
Historically Underserved Populations	Opportunities for low-income and minority populations	Qualitative	Assessment of improved access to opportunities (activity nodes served, as described below) for low-income and minority populations within station areas and how the project would improve access for low-income and minority populations along the system to these nodes, as well as access for low-income and minority populations in the study area to major regional employment and educational destinations
		Quantitative	Percent of rent-restricted or subsidized rental units 10-minute walkshed (i.e., rent- and income-restricted housing units)
	Low-income population	Quantitative	Low-income population (i.e., households below 2 times the federal poverty level) within 10-minute walkshed and 15-minute ride on connecting high frequency transit
	Minority population [6]	Quantitative	Minority population within 10-minute walkshed and 15-minute ride on connecting high frequency transit
	Youth population (under 18)	Quantitative	Youth population (under 18) within 10-minute walkshed and 15-minute ride on connecting high frequency transit
	Elderly population (65 and over)	Quantitative	Elderly population (65 and over) within 10-minute walkshed and 15-minute ride on connecting high frequency transit
	Limited English Proficiency (LEP) population	Quantitative	LEP population within 10-minute walkshed and 15-minute ride on connecting high frequency transit
	Disabled population	Quantitative	Disabled population (includes those with hearing, vision, or ambulatory disability) within 10-minute walkshed and 15-minute ride on connecting high frequency transit
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies			
Station Area Land Use Plan Consistency	Compatibility with Seattle designated Urban Centers and Villages	Quantitative	Percent of 10-minute station walkshed land area located within Seattle-designated Urban Centers and/or Villages

Table 3-2 Level 2 Screening Evaluation Criteria, Measures and Methods (by segment)

Purpose and Need (1)/ Evaluation Criteria (2)	Measure (3)	Quantitative or Qualitative (4)	Methods (5)
	Station locations consistent with current local land use plans	Qualitative	Compatibility and consistency of station locations with current local land use plans
	Activity nodes served	Quantitative	Number of activity nodes (e.g., points of interest, gathering spaces, food banks, educational institutions, parks and recreational resources) within 10-minute walkshed of stations
Modal Integration	Passenger transfers	Qualitative	Assessment of ease of passenger transfer for riders transferring between light rail lines, and between light rail and other motorized modes (i.e., bus, paratransit, drop-off/pick-up, transportation network companies [TNC]) at stations
	Bus/rail and rail/rail integration	Quantitative/ Qualitative	Assessment of peak-hour bus and rail trips that stop within one block of proposed station locations relative to the total number of peak-hour bus and rail trips within a reasonable walking distance (e.g., 700-foot-walk) of proposed stations
	Bicycle accessibility	Quantitative	Percent of bicycle facility miles (i.e., neighborhood greenways, bicycle lanes, protected bicycle lanes, and trails) to total roadway miles within 10-minute bikeshed of stations
Station Area Development Opportunities	Pedestrian and persons with limited mobility accessibility	Quantitative/ Qualitative	Assessment of number of intersections, percent of sidewalk and trail miles to total roadway miles, and assessment of impediments to pedestrian and American with Disabilities Act (ADA) access (i.e., large intersections with signal delay, significant topography or grade challenges) within 10-minute walkshed of stations
	Development potential	Quantitative	Development potential based on zoned capacity and market conditions within 10-minute walkshed of stations (5-minute walkshed in downtown)
	Equitable development opportunities	Qualitative	Assessment of unique opportunities for equitable development enabled by station location and/or conceptual configuration
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices			
Environmental Effects	National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle Landmarks	Quantitative	Number of intersected or adjacent NRHP-listed, NRHP-eligible, and Seattle Landmark property impacts based on Department of Archaeology and Historic Preservation (DAHP) data and Seattle Landmark data
	Potential archaeological resources	Quantitative	Percent of alternative length within previously identified archaeologically sensitive areas that are 500 feet (or 0.5 miles at water crossings) from alignment
	Parks and recreational resources	Quantitative	Number of and estimated area of potential permanent impacts to parks and recreational resources
	Water resources	Quantitative	Estimated acres of potential permanent in-water impacts
	Fish and wildlife habitats	Quantitative	Estimated acres of potential permanent impact to fish and wildlife habitats using city of Seattle environmentally critical areas
	Hazardous materials	Quantitative	Number of contaminated properties potentially impacted, including Superfund sites
	Visual	Quantitative/ Qualitative	Assessment of the length of elevated guideway adjacent to residential or other visually sensitive areas, including parks and historic properties and an assessment of scale of elevated guideway in visually sensitive areas and potential impacts to State Environmental Policy Act (SEPA) Scenic Routes
	Noise and vibration	Quantitative/ Qualitative	Assessment of the number of potentially affected noise and vibration sensitive receivers, including residences, libraries, performance halls, schools, churches, and selected parks within 350 feet of alignment; presence of known noise and vibration sensitive facilities will be noted
	Property acquisitions and displacements	Quantitative	Number of properties potentially affected, including potential residential and business displacements; does not include potential permanent or temporary easements or area for construction tagging, traction power substations (TPSS) or underground station entrances
	Construction impacts	Qualitative	Assessment of temporary construction impacts to community, including potential for transportation, access, noise, vibration, and visual effects that could disrupt the community (e.g., existing residents, businesses, social service providers) and relative duration of construction and impacts to high volume traffic areas
	Burden on low-income and minority populations	Qualitative	Assessment of how potential acquisitions and displacements (residents and businesses) and visual, noise and construction impacts would affect minority and low-income populations relative to other communities and displacement risk from station area redevelopment
Traffic Operations	Traffic circulation and access	Qualitative	Effects on traffic and transit (i.e., bus and streetcar) operations, including potential lane restrictions, lane eliminations, turn restrictions, driveways impacted, and parking taken
	Transportation facilities	Qualitative	Effects on existing transportation facilities, including bicycle lanes, sidewalks, traffic interchanges and other transportation infrastructure as warranted, and compatibility with planned facilities
Economic Effects	Freight movement and access on land and water	Qualitative	Effects on existing and future freight mobility and future freight capacity expansion opportunities, including both on land and water
	Business and commerce effects	Qualitative	Effects on businesses, as well as commercial and industrial areas, including potential impacts during construction and operations from changes in access, travel patterns and displacements

Notes:
(1) Based on preliminary Purpose and Need Statement, with revisions incorporated from feedback received during the Level 1 evaluation.
(2) Criteria are subject to change as alternatives are refined and screened at each level, as well as to incorporate stakeholder input.
(3) Screening criteria and associated measures get progressively more detailed and quantitative as the alternatives are screened through Level 1, Level 2 and Level 3.
(4) Measures ranked from high to low based on anticipated ability to achieve evaluation measure; "High" = higher ability to achieve measure, "Medium" = moderate ability to achieve measure, "Low" = lower ability to achieve measure; no weighting will be applied.
(5) Agency and stakeholder input will be considered in the overall alternatives evaluation and screening process.
(6) Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native.

3.3 Agency and Community Engagement



A variety of stakeholders are engaged in the WSBLE Project, and their input helps inform the screening process as the WSBLE Project advances during the Alternatives Development phase. The agency and external engagement process actively seeks input and involvement from stakeholders through the following groups and forums:

- **Sound Transit Board:** Oversees implementation of WSBLE Project
- **Elected Leadership Group:** Elected officials who represent the project corridor and/or Sound Transit Board
- **Stakeholder Advisory Group:** Transit riders, residents, businesses, major institutional organizations, stakeholders, and members of the public
- **Interagency Group:** Senior staff from Sound Transit, city of Seattle and other partner agencies such as Port of Seattle, King County, Washington State Department of Transportation (WSDOT) and Federal Transit Administration (FTA)
- **Neighborhood Forums:** Community members interested in delving more deeply into issues specific to their neighborhood
- **Public:** People who live, work and commute in, through and around the Puget Sound region

These groups and forums supplement public engagement and outreach techniques already used by Sound Transit and offer opportunities for greater collaboration early in project development. This external engagement process is shown on **Figure 3-5** (Community Engagement and Collaboration Process).

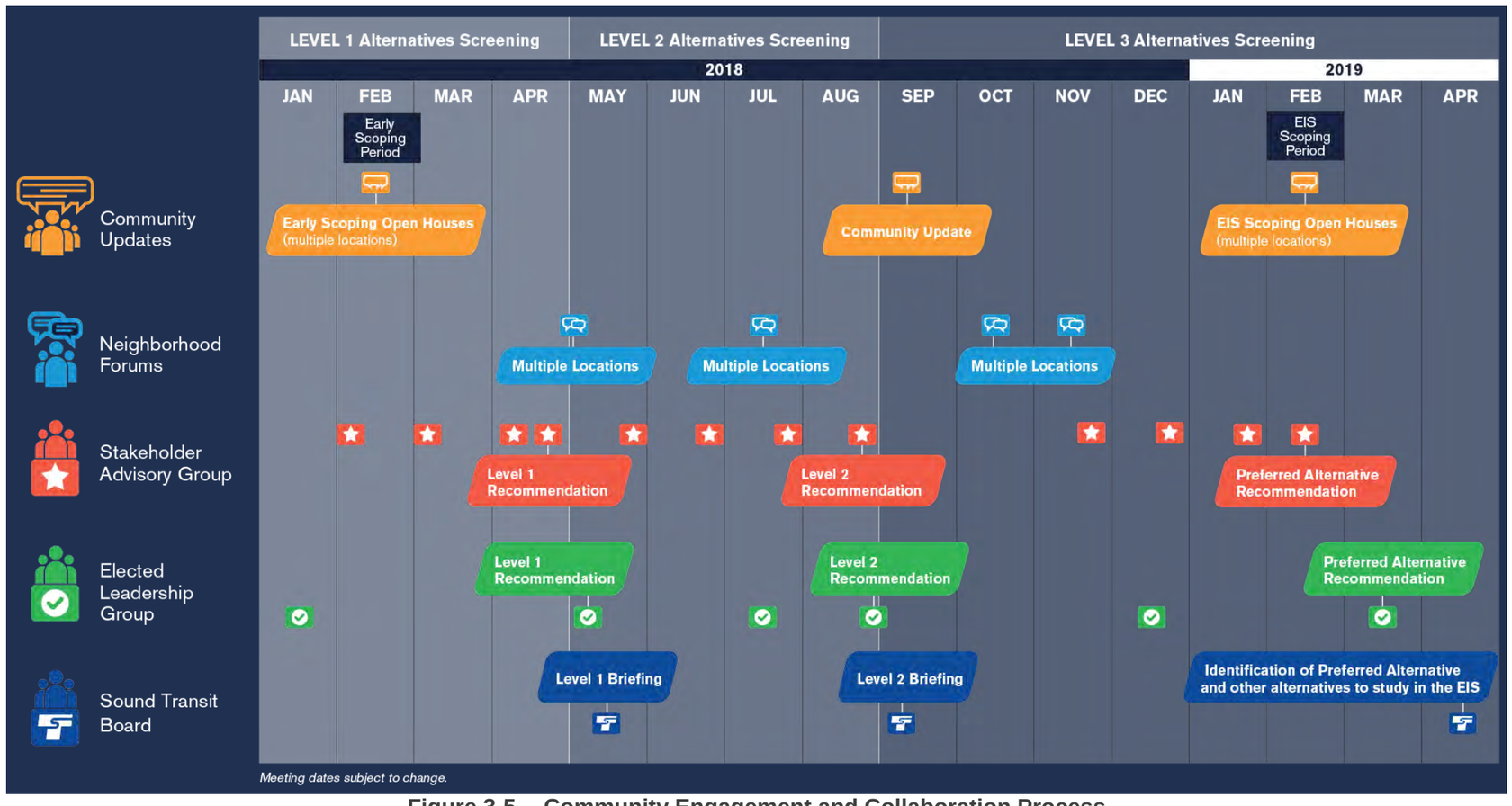


Figure 3-5 Community Engagement and Collaboration Process

3.3.1 Sound Transit Board

The Sound Transit Board oversees the implementation and delivery of the WSBLE Project, identifies the Preferred Alternative and other alternatives to study in the EIS, and makes other major project decisions. The Board considers recommendations and feedback from the ELG, SAG, IAG and public when making decisions about the project. The Sound Transit Board was briefed on the Level 2 evaluation and screening results on October 25, 2018, including the input received from the ELG, SAG, IAG and public.

3.3.2 Elected Leadership Group

The WSBLE Project's ELG is a group of elected officials that represent the service corridor and/or the Sound Transit Board. The purpose of this group is to reach consensus around key decisions and work through project issues as needed. ELG meetings are open to the public. The ELG:

- Appoints SAG members
- Works with project staff to understand and evaluate trade-offs
- Represents the communities they serve and shares community priorities
- Recommends a Preferred Alternative to study in the EIS to the Sound Transit Board based on the recommendations from the SAG, public input and the *ST3 Plan* project scope, schedule and budget

The ELG met on July 19, 2018 to review the Level 2 alternatives and screening criteria and then made their recommendations on the Level 2 Screening on October 5, 2018.

3.3.3 Stakeholder Advisory Group

The SAG provides a forum for community members to inform the development of alternatives for the project. Meetings are open to the public. The SAG:

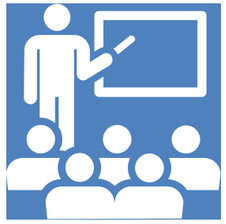
- Highlights potential issues and considers trade-offs in the corridor
- Makes recommendations on a Preferred Alternative to study in the EIS to the ELG

The SAG met on May 30, 2018 to go over the Level 2 alternatives development process. On June 20, 2018, they reviewed the Level 2 alternatives and screening criteria, as well as the new SODO and Chinatown/International District alternatives (see **Section 3.4** [Previous Level 1 Findings and Recommendations]). The SAG was then presented with the Level 2 evaluation and screening results at a meeting held on September 5, 2018, with a follow-up meeting on September 26, 2018 to provide their recommendations to the ELG on the alternatives to carry forward into the Level 3 Screening.

3.3.4 Interagency Group

The IAG is composed of senior staff from Sound Transit and partner city, county, and transit agencies empowered with technical decision-making authority. The IAG:

- Examines technical aspects and resolves issues at a staff level wherever possible
- Identifies issues to bring before the ELG and SAG
- Recommends subjects to address within partnering and permitting agreements



An IAG meeting was held on May 23, 2018 to discuss the Level 2 evaluation criteria, with a follow-up meeting on June 13, 2018 to review the Level 2 alternatives and changes made to criteria based on feedback from the SAG. The new SODO and Chinatown/International District alternatives were discussed with the IAG on July 16, 2018. Preliminary results of the Level 2 evaluation were presented at the IAG meeting on August 29, 2018.

3.3.5 Public

A variety of other public engagement activities complement all the engagement groups and forums including, but not limited to, open houses (in person and online), community briefings and meetings, e-newsletters, and attendance at fairs and festivals. The role of members of the public is to communicate ideas, concerns and questions about the project through a variety of communications channels to:

- Learn about the project and ask questions
- Provide feedback on topics and issues of interest
- Communicate to Sound Transit how the public wants to be engaged
- Share information and discuss the project with the community

The following public engagement activities occurred during the Level 2 evaluation from May to September 2018:

- 66 community briefings
- 11 festivals engaging more than 3,800 community members
- 9 email updates to more than 4,000 subscribers
- 7 Tweets to more than 82,000 users
- 5 Facebook posts to more than 30,000 users
- 67 comments and questions received via email
- 3,446 visits to an online open house from September 6 to 23, 2018

3.3.5.1 Neighborhood Forums

Neighborhood forum events provide an opportunity for community members to connect with their neighbors, follow the project's progress, delve more deeply into issues specific to their neighborhood, and voice their opinions at major decision points. At neighborhood forums, participants work together to:

- Examine and discuss area- and community-specific issues and concerns associated with the proposed alternatives
- Provide detailed feedback to inform alternatives development and decision-making, which is shared with the IAG, SAG, ELG and the Sound Transit Board

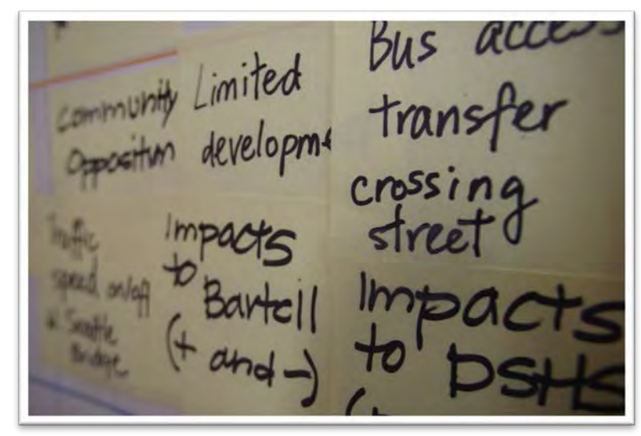
Sound Transit held a series of neighborhood forums in September 2019 to present the results of the Level 2 evaluation. Three neighborhood forums were conducted the following dates, times and locations during Level 2:

- **West Seattle:** Saturday, September 8, 2018 from 9 to 11:30 a.m. at the Seattle Lutheran High School Gym (4100 SW Genesee Street, Seattle)
- **Downtown Seattle:** Tuesday, September 11, 2018 from 5:30 to 8:00 p.m. at the Ruth Fisher Boardroom, Union Station (401 S Jackson Street, Seattle)
- **Ballard:** Monday, September 17, 2018 from 5:30 to 8:00 p.m. at Ballard Eagleson VFW (2812 NW Market Street, Seattle)

An online open house was also made available to the public for those who were unable to attend in person and/or wanted to review alternatives and provide comments online.

3.3.5.2 Station Charrettes

Eight station charrettes were held between June and September 2018 to review the stations associated with the Level 2 alternatives and begin discussing potential refinements for Level 3. Participants, including agency representatives and stakeholder groups, provided feedback on how stations could best serve the community with respect to transit integration, non-motorized access, and land use development. Sound Transit also conducted walking tours of the proposed station areas with the participants.



3.4 Previous Level 1 Findings and Recommendations

The previous Level 1 Screening began with an early scoping period held between February 2 and March 5, 2018. Early scoping provided agencies, tribes, and the public an opportunity to comment on the WSBLE Project. The ST3 Representative Project served as the starting point for this dialogue, and stakeholders were invited to offer their suggestions on possible alternatives. Stakeholders were also asked for their input on the preliminary Purpose and Need for the WSBLE Project, as well as potential community benefits and impacts, which provided feedback into the evaluation criteria, measures and methods used in the Alternatives Development process.

The Level 1 alternatives were developed within each of the four study segments—West Seattle/ Duwamish, SODO, Downtown and Interbay/Ballard. A total of 24 alternatives were studied in Level 1 at a segment level, with four additional alternatives for the International District/Chinatown Station in the Downtown Segment. The Level 1 alternatives were based on information from prior studies, technical analysis and considerations, and early scoping input from the agencies, public and stakeholders.

Level 1 relied on readily available information, with a high-level assessment of the alternatives within each of the study segments. The ST3 Representative Project served as the baseline alternative against which alternatives were compared during the Level 1 Screening. The Level 1 evaluation applied primarily qualitative criteria to measure the potential benefits and impacts and highlight differentiating characteristics among the alternatives relative to the ST3 Representative Project. The Level 1 Screening was intended to identify those alternatives that demonstrated the most promise, and to screen out those alternatives that had limited potential to meet the WSBLE Project's preliminary Purpose and Need and/or were deemed not practical.

Table 3-3 (Summary of Previous Elected Leadership Group Level 1 Screening Recommendations) lists the alternatives evaluated in Level 1 and highlights the alternatives that the ELG recommended be carried forward into the subsequent Level 2 Screening. It also lists the alternatives not carried forward into Level 2. On May 17, 2018, the ELG recommended to carry forward 16 of the Level 1 alternatives into Level 2.

At the meeting in May 2018, the ELG also requested additional study of alignments further west in SODO, as well as options for the International District/Chinatown Station. As such, the following additional Level 1 alternatives were evaluated:

- Occidental Avenue
- 6th Avenue
- 4th Avenue Cut-and-Cover Tunnel/Station
- 4th Avenue Bored Tunnel/Mined Station
- 5th Avenue Bored Tunnel/Mined Station
- Union Station Bored Tunnel/Mined Station

On July 17, 2018, the ELG recommended to advance the following four additional alternatives into Level 2 for the SODO and Chinatown/International District Segment:

- Occidental Avenue
- 4th Avenue Cut-and-Cover Tunnel/Station
- 4th Avenue Bored Tunnel/Mined Station
- 5th Avenue Bored Tunnel/Mined Station

More detailed information on Level 1 can be found in the *Level 1 Alternatives Development and Screening Technical Memorandum* (Sound Transit 2018).

Table 3-3 Summary of Previous Elected Leadership Group Level 1 Screening Recommendations

Segment / Level 1 Alternative	Carry Forward into Level 2	Do Not Carry Forward into Level 2
West Seattle/Duwamish Segment		
ST3 Representative Project	✓	
Pigeon Ridge/West Seattle Tunnel	✓	
West Seattle Bridge/Fauntleroy		✓
Yancy Street/West Seattle Tunnel		✓
Oregon Street/Alaska Junction	✓	
West Seattle Golf Course/Alaska Junction	✓	
SODO Segment		
ST3 Representative Project	✓	
Massachusetts Tunnel Portal	✓	
Surface E-3	✓	
Occidental Avenue	✓	
6th Avenue		✓
Downtown Segment		
ST3 Representative Project	✓	
5th/Harrison	✓	
5th/Mercer		✓
6th/Boren/Roy	✓	
8th/6th/Republican		✓
5th/Roy/Consolidated SLU Station (1)		✓
5th Avenue Bored Tunnel/Mined Station	✓	
4th Avenue Cut-and-Cover Tunnel/Station	✓	
4th Avenue Bored Tunnel/Mined Station	✓	
Union Station Bored Tunnel/Mined Station		✓
Interbay/Ballard Segment		
ST3 Representative Project	✓	
Elliott/15th/16th/Fixed Bridge	✓	
West of BNSF/20th/17th/Fixed Bridge (2)	✓	
West of BNSF/20th/17th/Tunnel	✓	
East of BNSF/14th/Movable Bridge	✓	
Elliott/Armory Way/14th/Tunnel	✓	
West of BNSF/20th/Tunnel		✓

NOTES: (1) SLU = South Lake Union; (2) BNSF = Burlington Northern Santa Fe

4 LEVEL 2 ALTERNATIVES EVALUATION AND FINDINGS

The Level 2 Screening developed and evaluated in greater detail those alternatives carried forward from the Level 1 Screening, including the additional alternatives for the SODO and Chinatown/International District Segment. However, the Level 2 evaluation employed a larger set of criteria and more use of quantitative measures. Like Level 1, the Level 2 Screening was conducted at the segment level.

The Level 2 alternatives were based on the findings of the Level 1 Screening, incorporating refinements based on input from the stakeholder and community engagement efforts. The 20 alternatives recommended for Level 2 were subsequently refined and optimized, leading to a total of 24 alternatives ultimately studied among the four study segments in Level 2. **Figure 4-1** (Level 2 Alternatives by Study Segment) shows the study segments and lists the Level 2 alternatives within each segment.

This section of the report is organized by study segment—West Seattle/Duwamish, SODO and Chinatown/International District, Downtown and Interbay/Ballard. An overview map of the alternatives in the segment and an evaluation summary table are provided at the beginning of each segment. The alternatives within the four study segments are then defined independently, with a map of the alternative illustrating the route, basic characteristics and station locations. The evaluation of the alternative is summarized based on the criteria under each Purpose statement, with the detailed evaluation matrices for each alternative and segment found in the appendices. Finally, the ELG recommendations regarding whether the alternatives should be carried forward for further study in the Level 3 Screening are listed.

West Seattle/Duwamish	SODO and Chinatown/ International District	Downtown	Interbay/Ballard
• ST3 Representative Project	• ST3 Representative Project	• ST3 Representative Project	• ST3 Representative Project
• Pigeon Ridge/West Seattle Tunnel	• Massachusetts Tunnel Portal	• 5th/Harrison	• 15th/Fixed Bridge/15th
• Oregon Street/Alaska Junction/ Elevated	• Surface E-3	• 6th/Boren/Roy	• 20th/Fixed Bridge/17th
• Golf Course/Alaska Junction/ Tunnel	• Occidental Avenue	• 5th/Terry/Roy/Mercer	• 20th/Tunnel/15th
• Oregon Street/Alaska Junction/ Tunnel	• 4th Avenue Cut-and-Cover Tunnel/Station		• Armory Way/Tunnel/14th
	• 4th Avenue Bored Tunnel/ Mined Station		• Central Interbay/Movable Bridge/14th
	• 5th Avenue Bored Tunnel/ Mined Station		• Central Interbay/Fixed Bridge/14th
			• Central Interbay/Tunnel/15th

Figure 4-1 Level 2 Alternatives by Study Segment

4.1 West Seattle/Duwamish Segment Alternatives Evaluation

The West Seattle/Duwamish Segment included the following five alternatives during the Level 2 Screening:

- ST3 Representative Project
- Pigeon Ridge/West Seattle Tunnel
- Oregon Street/Alaska Junction/Elevated
- Golf Course/Alaska Junction/Tunnel
- Oregon Street/Alaska Junction/Tunnel

These alternatives are delineated on **Figure 4-2** (West Seattle/Duwamish Segment—Level 2 Alternatives), with **Table 4-1** (West Seattle/Duwamish Segment—Level 2 Alternatives Evaluation Summary) summarizing the evaluation results. Individual descriptions and evaluation of each alternative are provided in the pages that follow. Refer to **Appendix B** (West Seattle/Duwamish Segment Level 2 Evaluation Matrices) for the detailed findings of each evaluation measure in this segment.

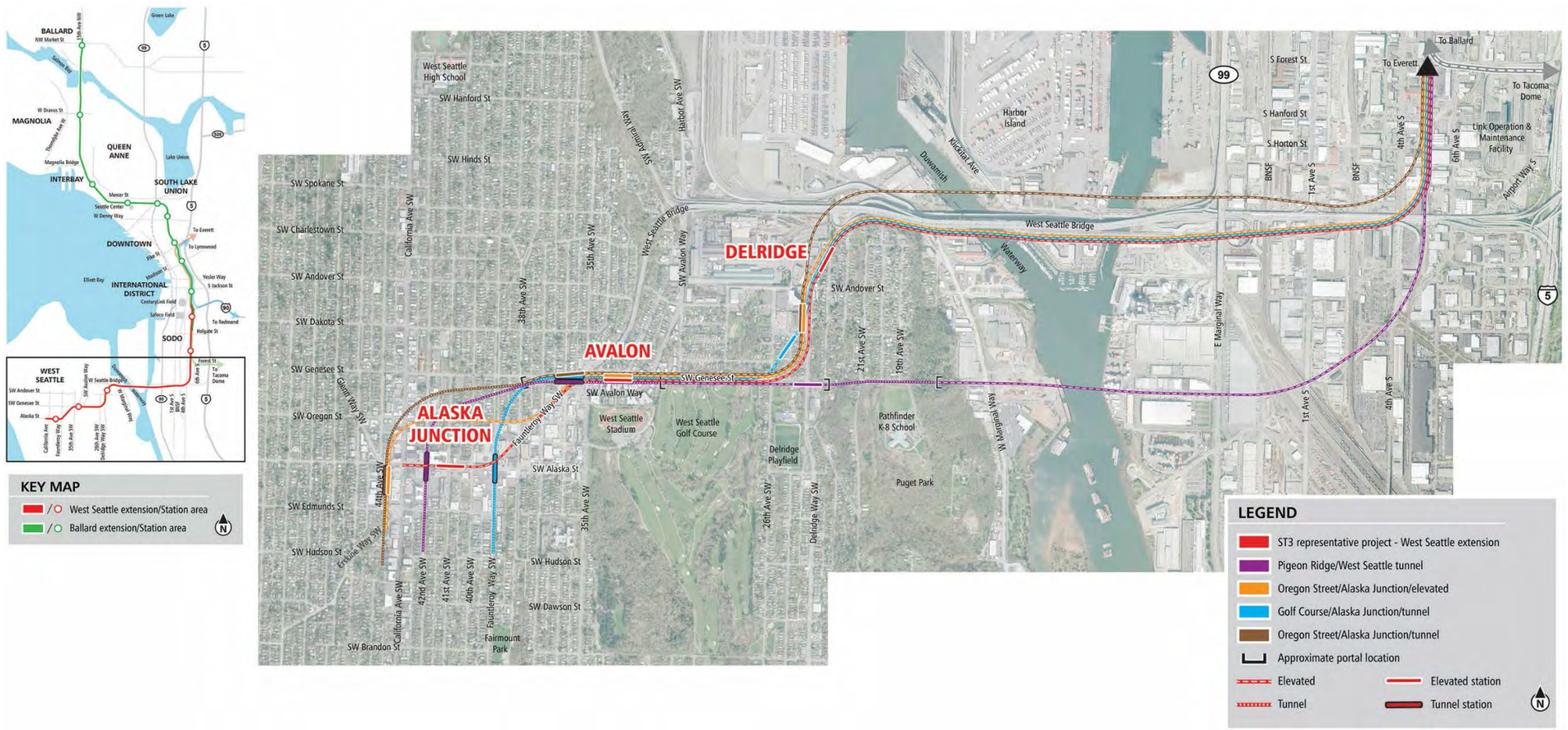


Figure 4-2 West Seattle/Duwamish Segment—Level 2 Alternatives

Table 4-1 West Seattle/Duwamish Segment Level 2 Alternatives Evaluation Summary

Purpose and Need / Evaluation Criteria	Alternatives				
	ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.					
Potential service interruptions and recoverability	High	High	High	High	High
LRT travel times (minutes)	7 to 8	7 to 8	7 to 8	7 to 8	7 to 8
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.					
LRT network integration	Medium	Medium	Medium	Medium	Medium
Passenger carrying capacity in downtown	Medium	Medium	Medium	Medium	Medium
Ridership potential (2040 population/employment) (1)	11,200	12,500	12,000	10,700	12,500
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.					
Station proximity to PSRC-designated regional growth centers	N/A (3)	N/A	N/A	N/A	N/A
Station proximity to PSRC-designated manufacturing/industrial centers	1	1	1	1	1
Accommodates future LRT extension beyond ST3	Low	Medium	Low	High	Medium
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.					
Mode, route and general station locations per ST3	High	High	High	Medium	High
Potential ST3 implementation schedule effects	High	Low	High	Low	Low
Potential ST3 operating plan effects	High	High	High	High	High
Engineering constraints	Medium	Low	Medium	Medium	High
Constructability issues	Low	Low	Low	Low	Medium
Operational constraints	Medium	High	Medium	Medium	Medium
Conceptual capital cost comparison (2017$)	--	$1,200 million increase	Similar	$700 million increase	$500 million increase
Operating cost impacts	High	Medium	High	Medium	Medium
Expand mobility for the corridor and region's residents, which include transit dependent, low-income and minority populations.					
Opportunities for low-income and minority populations (activity nodes/subsidized rental units)	Medium	Medium	Medium	Medium	Medium
	15%	13%	14%	15%	13%
Low-income population (1/2)	25% / 21%	24% / 21%	23% / 21%	26% / 21%	23% / 21%
Minority population (1/2) (4)	22% / 26%	23% / 26%	21% / 26%	23% / 26%	21% / 26%
Youth population (under 18) (1/2)	13% / 17%	14% / 17%	14% / 17%	13% / 17%	14% / 17%
Elderly population (65 and over) (1/2)	16% / 13%	15% / 13%	15% / 13%	16% / 13%	15% / 13%
LEP population (1/2)	3% / 4%	3% / 4%	3% / 4%	3% / 4%	3% / 4%
Disabled population (1/2)	9% / 9%	9% / 9%	9% / 9%	9% / 9%	9% / 9%

Table 4-1 West Seattle/Duwamish Segment Level 2 Alternatives Evaluation Summary

Purpose and Need / Evaluation Criteria	Alternatives				
	ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.					
Compatibility with Seattle designated Urban Centers and Villages (1)	34%	31%	31%	35%	29%
Station locations consistent with current local land use plans	High	High	High	High	High
Activity nodes served (1)	40	41	42	38	42
Passenger transfers	Medium	High	Medium	Medium	High
Bus/rail and rail/rail integration (1)	Medium	High	Medium	Medium	High
Bicycle accessibility (1)	14%	14%	15%	14%	15%
Pedestrian and persons with limited mobility accessibility (1)	Medium	High	High	High	High
Development potential (1)	13%	13%	13%	15%	12%
Equitable development opportunities	Low	Low	Medium	Medium	High
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.					
NRHP listed or eligible historic properties and Seattle City Landmarks	1	1	1	1	2
Potential archaeological resources	Low	Low	Low	Low	Low
Parks and recreational resources effects (acres)	1.5	3.5	1.5	2.8	0.6
Water resources effects (acres)	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fish and wildlife habitat effects (acres)	3.7	5.3	3.7	3.7	1.9
Hazardous materials sites	11	7	8	14	14
Visual effects (miles)	1.3	0.6	1.5	0.9	0.7
Noise and vibration sensitive receivers	Low	Low	Low	Medium	Low
Number of properties potentially affected	High	High	Low	High	Low
Number of potential residential unit displacements	Medium	Low	Low	High	Low
Square feet of potential business displacements	High	Medium	Low	High	Medium
Construction impacts	Low	High	Low	Medium	Medium
Burden on minority and low-income populations	High	High	High	High	High
Traffic circulation and access	Low	High	Medium	High	Medium
Transportation facilities	Low	High	Medium	Medium	High
Freight movement and access on land and water	Medium	Medium	Medium	Medium	Low
Business and commerce effects	Medium	High	Low	Medium	Medium

Notes: (1) Within station walksheds; (2) Within 15-minute ride on connecting high frequency transit; (3) N/A = Measure not applicable to this segment; (4) Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native

ST3 REPRESENTATIVE PROJECT

ALTERNATIVE *SEGMENT*
WEST SEATTLE/DUWAMISH

ROUTE DESCRIPTION

The ST3 Representative Project would begin in SODO, running along the E3 busway on an elevated structure. The route would then cross over the West Seattle Bridge and head west on an elevated structure over E Marginal Way. It would then continue onto a new high-level bridge spanning the Duwamish Waterway on the south side of the existing West Seattle Bridge. After crossing the river, the elevated route would round Pigeon Point, follow Delridge Way SW and run west along SW Genesee Street north of the West Seattle Golf Course. Continuing toward Alaska Junction, the elevated route would turn southwest on Fauntleroy Way SW, west on SW Alaska Street, and terminate at California Avenue SW.

STATIONS

Delridge	Elevated on Delridge Way SW just north of SW Andover Street
Avalon	Elevated on south side of SW Genesee Street between SW Avalon Way and 35th Avenue SW
Alaska Junction	Elevated on SW Alaska Street between 40th and 42nd avenues SW

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

- Shifted guideway south of existing West Seattle Bridge to accommodate bridge foundations
- Shifted guideway to south side of SW Genesee Street to reduce traffic impacts

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated alternative • Travel time estimate 7 to 8 minutes between Alaska Junction and SODO stations
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity • Approximately 11,200 forecasted population and employment served in 2040
Connect regional centers	• Delridge Station within reasonable walking distance of Duwamish Manufacturing and Industrial Center (MIC); no regional growth centers in segment • Alaska Junction Station east-west orientation difficult to turn south for future LRT extension
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • Engineering constraints with long span bridges and straddle bents over S Spokane Street and SR 99 • Constructability issues associated with potential soil stabilization challenge at Pigeon Point • Relatively tight radius curves crossing West Seattle Bridge and around Pigeon Point would result in reduced speed • In-water construction activities would potentially impact vessel traffic in navigation channel, fish windows and tribal treaty fishing
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Similar low-income populations as rest of the city and slightly lower minority populations • Similar youth, elderly, LEP and disabled populations as rest of the city
Encourage equitable and sustainable urban growth	• Local land use plans are supportive of all three stations • Alaska Junction and Avalon stations would serve rezoned West Seattle Triangle area • Adequate passenger transfer opportunities, but Avalon Station east of Fauntleroy Way SW more difficult to access • Limited equitable development opportunities at all three station locations
Promote a healthy built, natural, and social environment	• Potential permanent effects to steep slopes and wildlife habitat on Pigeon Point • Increased visual effects from high elevated guideway along SW Genesee Street, as well as Fauntleroy Way SW compared to tunnel alternatives in segment • Potential residential displacements in Delridge and Avalon neighborhoods • Potential permanent impacts on three parks, including Harbor Marina Corporate Center at Terminal 102, West Duwamish Greenbelt and West Seattle Golf Course • Temporary visual, noise, vibration and traffic impacts on residences in West Seattle during construction • Potential permanent impacts to traffic circulation and access, as well as to transportation facilities • Permanent in-water impacts from potential piers in the Duwamish Waterway

PIGEON RIDGE/WEST SEATTLE TUNNEL

ALTERNATIVE | *SEGMENT* **WEST SEATTLE/DUWAMISH**

ROUTE DESCRIPTION

This alternative would start in SODO on an elevated structure running along the E3 busway, but it would continue further south after crossing over the West Seattle Bridge. The elevated route would then turn west over 4th Avenue S, 1st Avenue S, the Union Pacific Railroad (UPRR) yard, and E Marginal Way. It would then cross the Duwamish Waterway via a new high-level bridge, transition into a tunnel beneath Pigeon Ridge, and then emerge back onto an elevated structure paralleling SW Genesee Street. The elevated structure would travel along the northern edge of the West Seattle Golf Course. Approaching SW Avalon Way, the route would again transition into a tunnel to 42nd Avenue SW and then terminate in a tunnel near 42nd Avenue SW and SW Hudson Street.

STATIONS

Delridge	Elevated on SW Genesee Street spanning Delridge Way SW
Avalon	Tunnel south side of SW Genesee Street straddling Fauntleroy Way SW
Alaska Junction	Tunnel under 42nd Avenue SW straddling SW Alaska Street

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

- Shifted Duwamish Waterway crossing further south, closer to S Idaho Street
- Shifted Avalon Station west to straddle Fauntleroy Way SW for improved station access

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated alternative • Travel time estimate 7 to 8 minutes between Alaska Junction and SODO stations
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity • Approximately 12,500 forecasted population and employment served in 2040; greater than segment average due to well-spaced West Seattle stations and more southern Delridge Station
Connect regional centers	• Delridge Station within reasonable walking distance of Duwamish MIC; no regional growth centers in segment • Alaska Junction Station north-south orientation in tunnel accommodates future LRT extension
Technically feasible and financially sustainable	• Mode, route, and station locations generally consistent with *ST3 Plan* • Inclusion of tunnels could increase implementation schedule • Engineering constraints associated with unstable slopes at Pigeon Ridge, widest crossings over Duwamish Waterway and elevated structure over UPRR yard • Higher cost approximately $1,200 million more than ST3 Representative Project • Tunnel costs not included in ST3 financial plan or evaluation methodology • In-water construction activities would potentially impact vessel traffic in navigation channel, fish windows and tribal treaty fishing
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Similar low-income populations as rest of the city and slightly lower minority populations • Similar youth, elderly, LEP, and disabled populations as rest of the city
Encourage equitable and sustainable urban growth	• Local land use plans are supportive of all three stations • Alaska Junction and Avalon stations would serve rezoned West Seattle Triangle area • Limited equitable development opportunities at Delridge and Avalon stations; some opportunities at Alaska Junction Station
Promote a healthy built, natural, and social environment	• Potential permanent impacts on four parks, including Delridge Playfield, Pigeon Point Park, West Duwamish Greenbelt and West Seattle Golf Course • Most potential permanent impact to wildlife habitat on the West Duwamish Greenbelt at Pigeon Ridge compared to other alternatives in segment • More potential residential displacements around Alaska Junction Station compared to other alternatives in segment • Least disruptive to Delridge and Pigeon Point neighborhoods during construction • Avoids disruption to freight movement on Harbor Island • Permanent in-water impacts from potential piers in the Duwamish Waterway

OREGON STREET/ALASKA JUNCTION/ELEVATED

ALTERNATIVE *SEGMENT*
WEST SEATTLE/DUWAMISH

ROUTE DESCRIPTION

This alternative would run on an elevated structure along the E3 busway in SODO. The route would then cross over the West Seattle Bridge and head west on an elevated structure over E Marginal Way. It would then span the Duwamish Waterway on a new high-level bridge on the south side of the existing West Seattle Bridge. After crossing the river, the elevated route would round Pigeon Point and follow Delridge Way SW to SW Genesee Street. The elevated route would run along SW Genesee Street, turn southwest on Fauntleroy Way SW, then head west and follow SW Oregon Street toward California Avenue SW. The elevated route would turn southwest of California Avenue SW and end just beyond SW Edmunds Street near Erskine Way SW.

STATIONS

Delridge	Elevated on Delridge Way SW south of SW Andover Street
Avalon	Elevated on SW Genesee Street between SW Avalon Way and 35th Avenue SW
Alaska Junction	Elevated east of 44th Avenue SW south of SW Alaska Street

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

- Shifted guideway to south side of existing West Seattle Bridge (versus north side)

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated alternative • Travel time estimate 7 to 8 minutes between Alaska Junction and SODO stations
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity • Approximately 12,000 forecasted population and employment served in 2040
Connect regional centers	• Delridge Station within reasonable walking distance of Duwamish MIC; no regional growth centers in segment • Accommodates future southern LRT extension, but likely would require elevated structure along California Avenue SW to south or parallel facility
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • Engineering constraints with long span bridges and straddle bents over S Spokane Street and SR 99 • Constructability issues associated with potential soil stabilization challenge at Pigeon Point • Relatively tight radius curves crossing West Seattle Bridge and around Pigeon Point would result in reduced speed • Cost similar to ST3 Representative Project • In-water construction activities would potentially impact vessel traffic in navigation channel, fish windows and tribal treaty fishing
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Similar low-income populations as rest of the city and slightly lower minority populations • Similar youth, elderly, LEP and disabled populations as rest of the city
Encourage equitable and sustainable urban growth	• Local land use plans are supportive of all three stations • Alaska Junction and Avalon stations would serve rezoned West Seattle Triangle area • Equitable development opportunities near Delridge Station; limited opportunities at Avalon and Alaska Junction stations
Promote a healthy built, natural, and social environment	• Potential permanent effects to steep slopes and wildlife habitat on Pigeon Point • Potential for residential displacements in Delridge neighborhood and around Avalon and Alaska Junction stations • Potential business and industry displacements in Duwamish industrial areas and at the Junction as it crosses California Avenue SW • Potential permanent impacts on three parks, including Harbor Marina Corporate Center at Terminal 102, West Duwamish Greenbelt and West Seattle Golf Course • Increased visual effects from high elevated guideway along SW Genesee Street, as well as Fauntleroy Way SW compared to tunnel alternatives • Greatest potential for temporary disruption to Alaska Junction neighborhood during construction, compared to tunnel alternatives • Permanent in-water impacts from potential piers in the Duwamish Waterway

GOLF COURSE/ALASKA JUNCTION/TUNNEL

ALTERNATIVE *SEGMENT*
WEST SEATTLE/DUWAMISH

ROUTE DESCRIPTION

Beginning on an elevated structure along the E3 busway in SODO, this route would then cross over and parallel the south side of the existing West Seattle Bridge. The route would then span the Duwamish Waterway on a new high-level bridge south of the existing bridge. Rounding Pigeon Point, the elevated route would continue south along Delridge Way SW and then turn on a diagonal heading southwest to SW Genesee Street. The route would operate on an elevated structure on the north edge of the West Seattle Golf Course before entering a tunnel near SW Avalon Way. The tunnel would then curve south on Fauntleroy Way SW and terminate near SW Hudson Street.

STATIONS

Delridge	Elevated on a diagonal between Delridge Way SW and 26th Avenue SW north of SW Genesee Street
Avalon	Tunnel beneath SW Genesee Street straddling Fauntleroy Way SW
Alaska Junction	Tunnel beneath Fauntleroy Way SW straddling SW Alaska Street

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

- Changed name of alternative; previously Modified Golf Course/Alaska Junction/Tunnel
- Shifted guideway south of existing West Seattle Bridge, on a diagonal to SW Genesee Street, and then north edge of Golf Course (versus through it)
- Added Avalon Station for improved access to community

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated alternative • Travel time estimate 7 to 8 minutes between Alaska Junction and SODO stations
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity • Approximately 10,700 forecasted population and employment served in 2040; lower than segment average due to closely spaced Avalon and Alaska Junction stations
Connect regional centers	• Delridge Station within reasonable walking distance of Duwamish MIC; no regional growth centers in segment • Better accommodates future light rail extension, with route alignment and terminal Alaska Junction Station closer to 35th Avenue SW
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • Inclusion of tunnel could increase implementation schedule • Engineering constraints with long span bridges and straddle bents over S Spokane Street and SR 99 • Constructability issues associated with potential soil stabilization challenge at Pigeon Point • Higher cost approximately $700 million more than ST3 Representative Project • Tunnel costs not included in ST3 financial plan or evaluation methodology • In-water construction activities would potentially impact vessel traffic in navigation channel, fish windows and tribal treaty fishing
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Similar low-income populations as rest of the city and slightly lower minority populations • Similar youth, elderly, LEP and disabled populations as rest of the city
Encourage equitable and sustainable urban growth	• Local land use plans are supportive of all three stations • Alaska Junction and Avalon stations would serve rezoned West Seattle Triangle area • Greatest redevelopment potential, with more redevelopable land within station areas than other alternatives in segment • Greater equitable development opportunities near Delridge Station; limited opportunities at Avalon and Alaska Junction stations
Promote a healthy built, natural, and social environment	• Potential permanent effects to steep slopes and wildlife habitat on Pigeon Point • Potential permanent impacts on three parks, including Harbor Marina Corporate Center at Terminal 102, West Duwamish Greenbelt and West Seattle Golf Course • Lesser visual effects from lower guideway along SW Genesee Street compared to elevated alternatives • Tunnel Alaska Junction Station at Fauntleroy Way SW would lessen residential and business effects at the Junction • Permanent in-water impacts from potential piers in the Duwamish Waterway

OREGON STREET/ALASKA JUNCTION/TUNNEL

ALTERNATIVE — *SEGMENT* **WEST SEATTLE/DUWAMISH**

ROUTE DESCRIPTION

This alternative would run on an elevated structure along the E3 busway in SODO before heading west north of the existing West Seattle Bridge. The route would span the Duwamish Waterway on a new high-level bridge. It would then cross over the West Seattle Bridge ramp, pass the Nucor Steel property and run south adjacent to Delridge Way SW. The route would then turn west on SW Genesee Street before entering a tunnel near 37th Avenue SW. The tunnel would curve southwest heading south along 44th Avenue SW and terminate near SW Hudson Street.

STATIONS

Delridge	Elevated along Delridge Way SW south of SW Andover Street
Avalon	Elevated along SW Genesee Street straddling Fauntleroy Way SW
Alaska Junction	Tunnel at 44th Avenue SW south of SW Alaska Street

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

- New alternative in Level 2

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated alternative • Travel time estimate 7 to 8 minutes between Alaska Junction and SODO stations
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity • Approximately 12,500 forecasted population and employment served in 2040; greater than segment average due to well-spaced West Seattle stations
Connect regional centers	• Delridge Station within reasonable walking distance of Duwamish MIC; no regional growth centers in segment • Tunnel route beneath Alaska Junction accommodates future southern LRT extension, but west of California Avenue SW
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • Inclusion of tunnel could increase implementation schedule • Fewer engineering constraints and constructability issues compared to other alternatives by avoiding steep and unstable slope at Pigeon Point • Higher cost approximately $500 million more than ST3 Representative Project • Tunnel costs not included in ST3 financial plan or evaluation methodology • In-water construction activities would potentially impact vessel traffic in navigation channel, fish windows and tribal treaty fishing
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Similar low-income populations as rest of the city and slightly lower minority populations • Similar youth, elderly, LEP and disabled populations as rest of the city
Encourage equitable and sustainable urban growth	• Local land use plans are supportive of all three stations • Alaska Junction and Avalon stations would serve rezoned West Seattle Triangle area • Equitable development opportunities near Delridge and Alaska Junction stations; tunnel configuration at Alaska Junction Station provides greater opportunities than elevated configuration in similar location
Promote a healthy built, natural, and social environment	• Fewest park and wildlife habitat impacts compared to other alternatives • Visual effects from high elevated guideway along SW Genesee Street, as well as along Fauntleroy Way SW due to elevated Avalon Station • Greater number of residential displacements would occur in Delridge neighborhood, for tunnel portal west of Fauntleroy Avenue SW, and around Avalon and Alaska Junction stations compared to other alternatives • Elevated guideway on north side of West Seattle Bridge would reduce temporary construction impacts on Pigeon Point neighborhood, but potentially affect freight and Port of Seattle terminal facilities, especially during construction • Permanent in-water impacts from potential piers in the Duwamish Waterway

4.1.1 West Seattle/Duwamish Segment Summary Findings

The extension of LRT to West Seattle has several design and construction challenges, particularly associated with the Duwamish Waterway crossing, including effects to water resources and tribal treaty fishing from permanent in-water piers in the Duwamish Waterway, and steep slope/terrain issues in the Delridge and Alaska Junction neighborhoods. The alternatives developed and considered during the Level 2 Screening attempted to address a variety of different challenges and community concerns, and the evaluation sought to highlight potential benefits or impacts associated with each alternative.

The Level 2 Screening also shed light on key themes and issues to consider as the alternatives carried forward into the Level 3 Screening are refined and then pieced together from end-to-end. In the West Seattle/Duwamish Segment, neighborhood impacts, environmental conditions and construction complexity issues emerged as key themes for future consideration.

General discussion and feedback from the public, SAG and ELG included the following common themes for the Level 2 alternatives evaluation and screening:

- Interest in good transfer environment and TOD opportunities at Delridge Station
- Concern with location of station on Fauntleroy; does not serve Alaska Junction well and too close to Avalon Station
- Concern with potential state freight mobility impacts of construction of Duwamish crossing north of West Seattle Bridge
- Modify the ST3 Representative Project by shifting the Delridge Station further south and the Alaska Junction Station east and oriented north-south
- Explore tradeoffs with 44th Avenue SW Alaska Junction Station location in comparison to 41st and 42nd avenues SW
- Continued interest in Alaska Junction Station at 42nd Avenue SW

For the alternatives advanced to the Level 3 Screening, additional design efforts will be conducted to refine those alternatives, and to provide additional detail on potential benefits or impacts of the end-to-end alternatives.

Table 4-2 (West Seattle/Duwamish Segment ELG Screening Recommendations) identifies the alternatives that the ELG recommended be carried forward for additional design refinement and evaluation as part of the Level 3 Screening. Additional evaluation information and results for the West Seattle/Duwamish alternatives are found in **Appendix B** (West Seattle/Duwamish Segment Level 2 Evaluation Matrices).

Table 4-2 West Seattle/Duwamish Segment ELG Screening Recommendations

Level 2 Alternative	Key Findings	Public Feedback and Common Themes	Carry Forward into Level 3	With Suggested Refinements for Level 3
ST3 Representative Project	• Carries forward into Level 3 as ST3 Representative Project	• Explore moving Delridge Station further south • Explore Alaska Junction Station east and oriented north-south	Yes	• Shift Delridge Station further south • Shift Alaska Junction Station east and oriented north-south
Pigeon Ridge/West Seattle Tunnel	• Most engineering constraints • Most effects on Duwamish Greenbelt • Low guideway along SW Genesee Street • Fewer residential and business effects in Delridge • Costs approximately $1,200 million more than ST3 Representative Project; tunnel costs not included in ST3 financial plan or evaluation methodology and requires funding partnerships • Increases schedule risk compared to ST3 Representative Project	• Concern about overall cost and environmental effects • Support for lower guideway along SW Genesee Street and fewer residential effects in Delridge • Support for Alaska Junction Station at 42nd Avenue NW	No	--
Oregon Street/Alaska Junction/Elevated	• Increases residential and business effects at Alaska Junction • Complicates a future extension to the south • High guideway along SW Genesee Street • Cost would be similar to ST3 Representative Project	• Concern about elevated guideway across California Avenue SW • If elevated, explore locating terminus station east of Junction	No	--
Golf Course/Alaska Junction/Tunnel	• Fewer residential and business effects at Alaska Junction • Low guideway along SW Genesee Street • Costs approximately $700 million more than ST3 Representative Project; tunnel costs not included in ST3 financial plan or evaluation methodology and requires funding partnerships • Increases schedule risk compared to ST3 Representative Project	• General support for this alternative, with development opportunities at Delridge Station location to serve neighborhood • Support for lower guideway along SW Genesee Street • Explore Alaska Junction Station location at 41st and 42nd avenues NW • Explore north crossing of Duwamish Waterway	Yes	• Shift Alaska Junction Station locations to 41st and 42nd avenues NW • North crossing of Duwamish Waterway
Oregon Street/Alaska Junction/Tunnel	• High guideway along SW Genesee Street • Fewer engineering constraints • Affects freight and port terminal facilities during construction • Costs approximately $500 million more than ST3 Representative Project; tunnel costs not included in ST3 financial plan or evaluation methodology and requires funding partnerships • Increases schedule risk compared to ST3 Representative Project	• General support for north crossing of Duwamish Waterway due to less environmental effects, but interest in minimizing freight effects • Concern about Alaska Junction Station locations at 44th Avenue NW • Concern with higher guideway along SW Genesee Street • Explore Alaska Junction Station location at 41st and 42nd avenues NW	No	--

4.2 SODO and Chinatown/International District Segment Alternatives Evaluation

The SODO and Chinatown/International District Segment included the following seven alternatives during the Level 2 Screening:

- ST3 Representative Project
- Massachusetts Tunnel Portal
- Surface E3
- Occidental Avenue
- 4th Avenue Cut-and-Cover Tunnel/Station
- 4th Avenue Bored Tunnel/Mined Station
- 5th Avenue Bored Tunnel/Mined Station

These alternatives are delineated on **Figure 4-3** (SODO and Chinatown/International District Segment—Level 2 Alternatives), with **Table 4-3** (SODO and Chinatown/International District Segment—Level 2 Alternatives Evaluation Summary) summarizing the evaluation results. Individual descriptions and evaluation of each alternative are provided in the pages that follow. Refer to **Appendix C** (SODO and Chinatown/International District Segment Level 2 Evaluation Matrices) for the detailed findings of each evaluation measure in this segment.

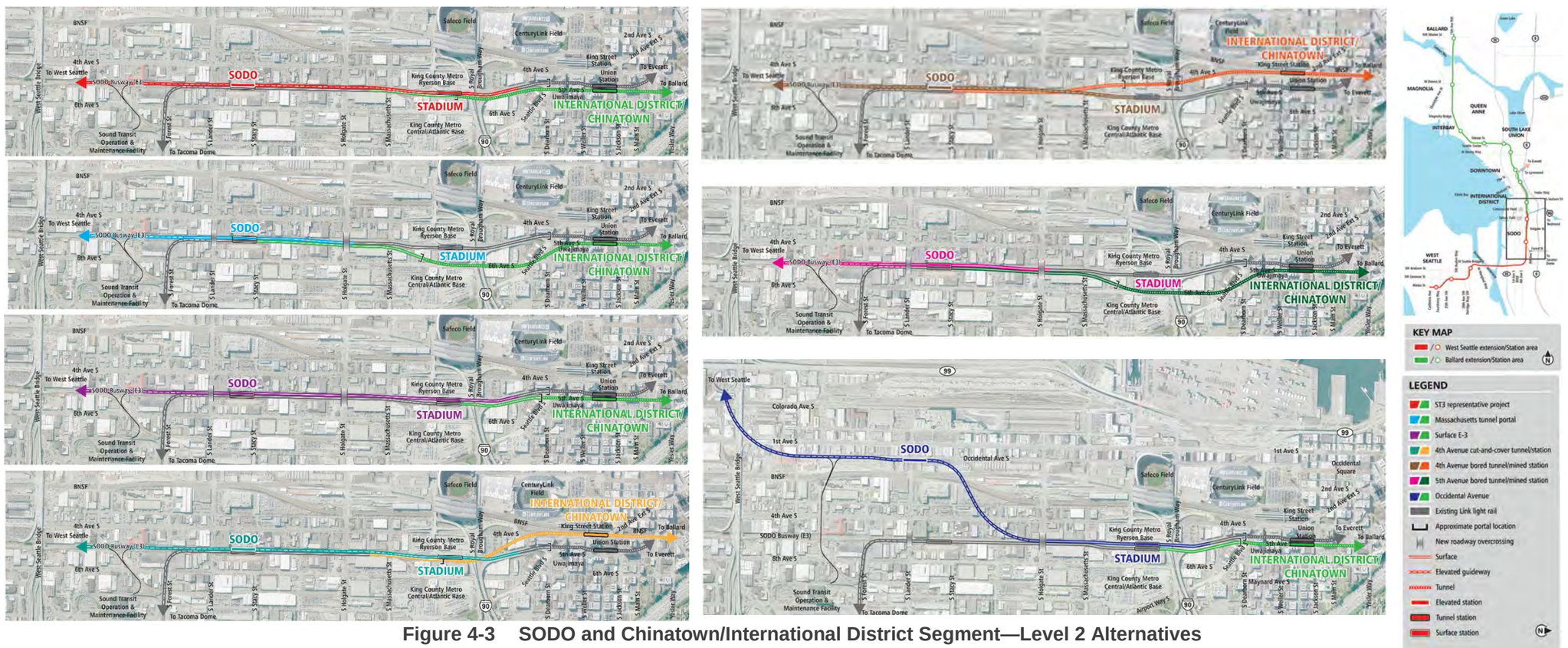


Figure 4-3 SODO and Chinatown/International District Segment—Level 2 Alternatives

Table 4-3 SODO and Chinatown/International District Segment—Level 2 Alternatives Evaluation Summary

Purpose and Need / Evaluation Criteria	Alternatives						
	ST3 Representative Project	Massachusetts Tunnel Portal	Surface E3	Occidental Avenue	4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.							
Potential service interruptions and recoverability	Low	Medium	High	High	Low	Low	Medium
LRT travel times (minutes)	3 to 4	3 to 4	3 to 4	3 to 4	3 to 4	3 to 4	3 to 4
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.							
LRT network integration	Medium	Medium	High	Medium	Medium	Medium	Medium
Passenger carrying capacity in downtown	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Ridership potential (2040 population/employment) (1)	35,900	35,900	35,900	37,100	35,300	35,300	35,900
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.							
Station proximity to PSRC-designated regional growth centers	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Station proximity to PSRC-designated manufacturing/industrial centers	1	1	1	1	1	1	1
Accommodates future LRT extension beyond ST3	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.							
Mode, route and general station locations per ST3	High	High	High	Medium	High	High	High
Potential ST3 implementation schedule effects	High	High	High	High	Low	Low	Medium
Potential ST3 operating plan effects	Medium	Medium	High	High	High	Low	Medium
Engineering constraints	Medium	Medium	Medium	Low	Low	Low	Medium
Constructability issues	Medium	Medium	Medium	Low	Low	Low	Medium
Operational constraints	Medium	Medium	High	Medium	Medium	Low	Medium
Conceptual capital cost comparison (2017$)	--	$200 million decrease	$400 million decrease	Similar (+$200 million in SODO)	$600 million increase	$500 million increase	Similar
Operating cost impacts	Medium	Medium	High	Medium	Medium	Medium	Medium
Expand mobility for the corridor and region's residents, which include transit dependent, low-income and minority populations.							
Opportunities for low-income and minority populations (activity nodes/subsidized rental units)	High	High	High	High	High	High	High
	80%	80%	80%	73%	75%	75%	80%
Low-income population (1/2)	59% / 49%	59% / 49%	59% / 49%	58% /49%	57% / 49%	57% / 49%	59% / 49%
Minority population (1/2) (4)	65% / 54%	65% / 54%	65% / 54%	65% / 53%	63% / 54%	63% / 54%	65% / 54%
Youth population (under 18) (1/2)	7% / 7%	7% / 7%	7% / 7%	7% / 8%	6% / 7%	6% / 7%	7% / 7%
Elderly population (65 and over) (1/2)	20% / 19%	20% / 19%	20% / 19%	20% / 19%	20% / 19%	20% / 19%	20% / 19%
LEP population (1/2)	30% / 19%	30% / 19%	30% / 19%	30% / 18%	28% / 19%	28% / 19%	30% / 19%
Disabled population (1/2)	24% / 19%	24% / 19%	24% / 19%	24% / 19%	25% / 19%	25% / 19%	24% / 19%

Table 4-3 SODO and Chinatown/International District Segment—Level 2 Alternatives Evaluation Summary

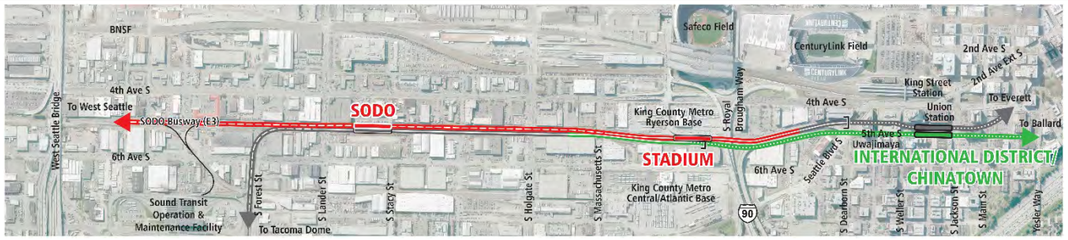
Purpose and Need / Evaluation Criteria	Alternatives						
	ST3 Representative Project	Massachusetts Tunnel Portal	Surface E3	Occidental Avenue	4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.							
Compatibility with Seattle designated Urban Centers and Villages (1)	41%	41%	41%	37%	41%	41%	41%
Station locations consistent with current local land use plans	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Activity nodes served (1)	57	57	57	56	54	54	57
Passenger transfers	High	Medium	Medium	Medium	Medium	Low	Low
Bus/rail and rail/rail integration (1)	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Bicycle accessibility (1)	21%	21%	21%	21%	21%	21%	21%
Pedestrian and persons with limited mobility accessibility (1)	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Development potential (1)	14%	14%	14%	15%	13%	13%	14%
Equitable development opportunities	Low	Medium	Low	High	Medium	Low	Medium
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.							
NRHP listed or eligible historic properties and Seattle City Landmarks	3	2	3	3	5	2	3
Potential archaeological resources	Low	Low	Low	Low	Low	Low	Low
Parks and recreational resources effects (acres)	0	0	0	0	0	0	0
Water resources effects (acres)	0	0	0	0	0	0	0
Fish and wildlife habitat effects (acres)	0	0	0	0	0	0	0
Hazardous materials sites	4	9	4	6	5	9	9
Visual effects (miles)	0	0	0	0	0	0	0
Noise and vibration sensitive receivers	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Number of properties potentially affected	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Number of potential residential unit displacements	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Square feet of potential business displacements	High	Low	High	Low	Low	High	Low
Construction impacts	Low	High	Medium	Medium	Low	Low	High
Burden on minority and low-income populations	Medium	Medium	Medium	Medium	Low	Low	High
Traffic circulation and access	Medium	High	Medium	Medium	Low	Medium	High
Transportation facilities	Low	High	Medium	Medium	Low	Low	High
Freight movement and access on land and water	Medium	High	Medium	Low	Low	Low	High
Business and commerce effects	Medium	Medium	Medium	Low	Medium	Medium	High

Notes: (1) Within station walksheds; (2) Within 15-minute ride on connecting high frequency transit; (3) N/A = Measure not applicable to this segment; (4) Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native

ST3 REPRESENTATIVE PROJECT

ALTERNATIVE | *SEGMENT*

SODO AND CHINATOWN/ID



ROUTE DESCRIPTION

After crossing over the Spokane Street Viaduct (i.e., the approach to the West Seattle Bridge), this alternative would run on an elevated guideway along the E3 busway to a new elevated SODO Station adjacent to the existing at-grade SODO Station. The route would continue north along the SODO E3 busway in an elevated configuration. At approximately SW Massachusetts Street, the route would transition down to existing grade, then continue to a rebuilt, at-grade Stadium Station, which would serve the West Seattle to Everett line. The route would then continue at-grade across S Royal Brougham Way and tie into the existing light rail line to Everett and DSTT.

At approximately the location of the existing Stadium Station, the existing light rail line from Tacoma would transition into a new cut-and-cover tunnel that would continue under S Royal Brougham Way. The existing Stadium Station would be demolished and rebuilt to accommodate the new tunnel portal. The tunnel route would continue north along the east side of the D-2 ramps carrying the East Link light rail line into a new International District/Chinatown tunnel station under 5th Avenue S, which would be constructed via cut-and-cover methods.

STATIONS

SODO (new)	New elevated immediately west of existing station for West Seattle line
Stadium (rebuilt existing)	Rebuilt existing at-grade and relocated on West Seattle line
International District/ Chinatown (existing)	Existing tunnel on West Seattle line
SODO (existing)	Existing at-grade on Ballard line
International District/ Chinatown (new)	New cut-and-cover tunnel station adjacent to existing station under 5th Avenue S for Ballard line

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

- None

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• At-grade crossings for existing Link light rail at S Lander Street, S Holgate Street and Royal Brougham Way S • Travel time estimate 3 to 4 minutes between SODO and International District/ Chinatown stations
Improve Downtown capacity for regional connectivity	• Facilitates spine segmentation • Does not preclude new light rail tunnel through downtown • Approximately 35,900 forecasted population and employment served in 2040
Connect regional centers	• SODO and Stadium stations located in Duwamish MIC; no regional growth centers in segment • Compatibility with future LRT extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• May not facilitate all desired special trackwork for track interconnections • Route could require WSDOT/East Link structure modifications • Elevated guideway would likely require greatest amount of ground improvements • Could require "S" development encroachment and right-of-way needs • Limited area for construction staging may result in increased service disruption
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Higher low-income and minority populations than rest of the city • Higher elderly, LEP and disabled populations than rest of the city, with lower youth populations
Encourage equitable and sustainable urban growth	• Strong local land use plans in International District/Chinatown Station area, including rezoning around historic Chinatown • Equitable development opportunities south of Airport Way S between International District/Chinatown and Stadium stations east of I-90 bus lane
Promote a healthy built, natural, and social environment	• No identified potential impacts to protected natural resources • Disruptive cut-and-cover methods on 5th Avenue S would cause periodic closures, greater noise, vibration, and visual effects to Chinatown/International District during construction • Transportation facilities affected include WSDOT ramps, Ryerson Base, E3 busway and Seattle Boulevard S

MASSACHUSETTS TUNNEL PORTAL

ALTERNATIVE

SEGMENT
SODO AND CHINATOWN/ID

ROUTE DESCRIPTION

Once across the Spokane Street Viaduct (i.e., the approach to the West Seattle Bridge) via an elevated guideway, this route would travel along the SODO E3 busway to S Forest Street and transition to existing grade south of S Lander Street. It would then enter a new at-grade SODO Station and tie into the existing light rail line to Everett at S Holgate Street.

North of the existing SODO Station, the existing light rail line from Tacoma would transition to a new Ballard line to the east. The route would transition into a retained cut configuration and then into a bored tunnel. The tunnel portal for the new downtown transit tunnel would be located near SW Massachusetts Street between the SODO busway and 6th Avenue S. The route would then continue north beneath 6th Avenue S, then transition to 5th Avenue S into a new International District/ Chinatown tunnel station under 5th Avenue S, which would be constructed via cut-and-cover methods.

STATIONS

SODO (new)	New at-grade immediately west of existing station for West Seattle line
Stadium (existing)	Existing at-grade remains on West Seattle line
International District/ Chinatown (existing)	Existing tunnel remains on West Seattle line
SODO (existing)	Existing at-grade remains on Ballard line
International District/ Chinatown (new)	New cut-and-cover tunnel station adjacent to existing station under 5th Avenue S for Ballard line

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

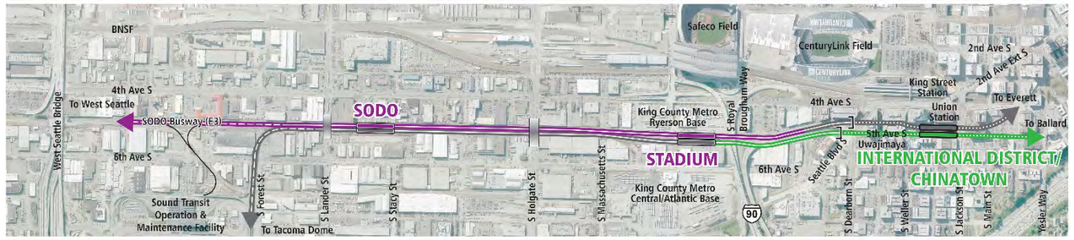
- Changed alignment profile from elevated to at-grade between S Forest and S Holgate streets
- Changed SODO Station from elevated to at-grade configuration
- Added grade separation of S Lander Street

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• New grade separated roadway crossings of S Lander Street and S Holgate Street • Travel time estimate 3 to 4 minutes between SODO and International District/ Chinatown stations
Improve Downtown capacity for regional connectivity	• Facilitates spine segmentation • Does not preclude new light rail tunnel through downtown • Approximately 35,900 forecasted population and employment served in 2040
Connect regional centers	• SODO and Stadium stations located in Duwamish MIC; no regional growth centers in segment • Compatibility with future LRT extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• May not facilitate all desired special trackwork for track interconnections, but more opportunities than ST3 Representative Project • Proximity issue to foundations of WSDOT/East Link structures • Minimizes elevated guideway and associated ground improvements • Least impact to King County Ryerson Base compared to other alternatives • Bored tunnel and portal in poor soils and high-water table • Lower cost approximately $200 million less than ST3 Representative Project
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Higher low-income and minority populations than rest of the city • Higher elderly, LEP and disabled populations than rest of the city, with lower youth populations
Encourage equitable and sustainable urban growth	• Strong local land use plans in International District/Chinatown Station area, including rezoning around historic Chinatown • Equitable development opportunities south of Airport Way S between International District/Chinatown and Stadium stations east of I-90 bus lane; property acquisitions along 6th Avenue S could create additional opportunities
Promote a healthy built, natural, and social environment	• Greater potential for business displacements around S Massachusetts Street tunnel portal and International District/Chinatown Station compared to other alternatives • Less disruptive construction impacts compared to other alternatives because of bored tunnel south of International District/Chinatown Station • Grade separations of S Lander and S Holgate streets would improve east-west mobility, including truck freight mobility • No impacts to Royal Brougham Way S expected

SURFACE E3

ALTERNATIVE | *SEGMENT*

SODO AND CHINATOWN/ID



ROUTE DESCRIPTION

Once across the Spokane Street Viaduct (i.e., the approach to the West Seattle Bridge) via an elevated guideway, this route would travel along the SODO E3 busway to S Forest Street and transition to grade south of S Lander Street. It would then enter a new at-grade SODO Station and continue north to a new Stadium Station serving the West Seattle to Everett line. The route would continue at-grade across S Royal Brougham Way and tie into the existing light rail line to Everett and DSTT.

The existing Stadium Station would remain to serve the Ballard to Tacoma line. North of the Stadium Station, the Ballard to Tacoma line would transition to a new at-grade line across S Royal Brougham Way and along the east side of the D-2 ramps carrying the East Link light rail line. The route would then enter a cut-and-cover tunnel portal located south of Seattle Boulevard into a new International District/Chinatown tunnel station under 5th Avenue S, which would be constructed via cut-and-cover methods.

STATIONS

SODO (new)	New at-grade immediately west of existing station for West Seattle line
Stadium (new)	New at-grade immediately west of existing station for West Seattle line
International District/ Chinatown (existing)	Existing tunnel remains on West Seattle line
Stadium (existing)	Existing at-grade remains on Ballard line
International District/ Chinatown (new)	New cut-and-cover tunnel station adjacent to existing station under 5th Avenue S for Ballard line

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

- None

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• New grade separated roadway crossings of S Lander Street and S Holgate Street and closure of vehicle traffic on Royal Brougham Way S • Travel time estimate 3 to 4 minutes between SODO and International District/ Chinatown stations
Improve Downtown capacity for regional connectivity	• Facilitates additional connectivity and operational flexibility beyond spine segmentation • Does not preclude new light rail tunnel through downtown • Approximately 35,900 forecasted population and employment served in 2040
Connect regional centers	• SODO and Stadium stations located in Duwamish MIC; no regional growth centers in segment • Compatibility with future LRT extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Facilities special trackwork and provides reliable system operations • Minimizes potential impacts to WSDOT/East Link structures • Minimizes elevated guideway and associated ground improvements • Reduced design of cut-and-cover tunnel in poor soils and high-water table • Roadway overcrossings in poor soils, with protection of existing utilities required • Lower cost approximately $400 million less than ST3 Representative Project
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Higher low-income and minority populations than rest of the city • Higher elderly, LEP and disabled populations than rest of the city, with lower youth populations
Encourage equitable and sustainable urban growth	• Strong local land use plans in International District/Chinatown Station area, including rezoning around historic Chinatown • Equitable development opportunities south of Airport Way S between International District/Chinatown and Stadium stations east of I-90 bus lane
Promote a healthy built, natural, and social environment	• No identified potential impacts to protected natural resources • Less disruptive construction impacts than ST3 Representative Project because of reduced cut-and-cover south of International District/Chinatown Station • Grade separations of S Lander and S Holgate streets would improve east-west mobility, including truck freight mobility • Closes Royal Brougham Way S to vehicle traffic

OCCIDENTAL AVENUE

ALTERNATIVE — *SEGMENT* **SODO AND CHINATOWN/ID**

ROUTE DESCRIPTION

This alternative would cross over the Spokane Street Viaduct (i.e., the approach to the West Seattle Bridge) near 1st Avenue S and then head north along the east side of Occidental Avenue S on an elevated structure. A new elevated SODO Station would be located just east of Occidental Avenue S, straddling S Lander Street. The route would then turn northeast over the Burlington Northern-Santa Fe (BNSF) Railway tracks and 4th Avenue S before merging into the SODO E3 busway. It would then transition to existing grade along the SODO E3 busway just south of S Holgate Street and continue north to a new Stadium Station serving the West Seattle to Everett line. The route would continue at-grade across S Royal Brougham Way and tie into the existing light rail line to Everett and DSTT.

The existing Stadium Station would remain to serve the Ballard to Tacoma line. North of the Stadium Station, the Ballard to Tacoma line would transition to a new at-grade line across S Royal Brougham Way and along the east side of the D-2 ramps carrying the East Link light rail line. The route would then enter a cut-and-cover tunnel portal located south of Seattle Boulevard into a new International District/Chinatown tunnel station under 5th Avenue S, which would be constructed via cut-and-cover methods.

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

- None

STATIONS

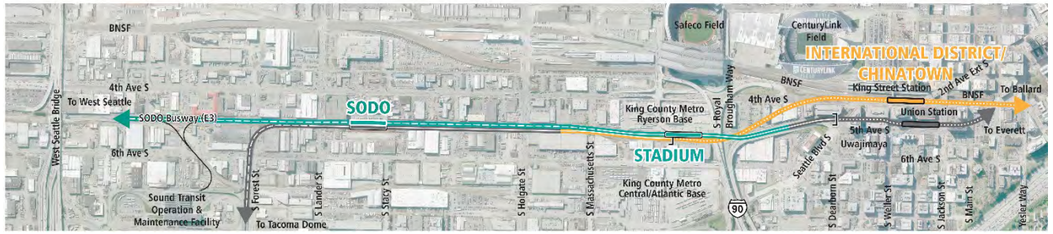
SODO (new)	New elevated at Occidental Avenue S and S Lander Street for West Seattle line
Stadium (new)	New at-grade immediately west of existing station for West Seattle line
International District/ Chinatown (existing)	Existing tunnel remains on West Seattle line
SODO (existing)	Existing at-grade remains on Ballard line
Stadium (existing)	Existing at-grade remains on Ballard line
International District/ Chinatown (new)	New cut-and-cover tunnel station adjacent to existing station under 5th Avenue S for Ballard line

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• New grade separated roadway crossings of S Lander Street and S Holgate Street and closure of vehicle traffic on Royal Brougham Way S • Travel time estimate 3 to 4 minutes between SODO and International District/ Chinatown stations
Improve Downtown capacity for regional connectivity	• Facilitates spine segmentation • Does not preclude new light rail tunnel through downtown • Approximately 37,100 forecasted population and employment served in 2040
Connect regional centers	• SODO and Stadium stations located in Duwamish MIC; no regional growth centers in segment • Compatibility with future LRT extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Mode, route, and general station locations moderately consistent with *ST3 Plan* due to location of SODO Station and degraded transfer with existing SODO Station assumed in *ST3 Plan* • Increases long-span elevated guideway structure compared to other alternatives, including over BNSF tracks, light rail mainline and operations and maintenance facility (OMF) connection; degraded connection to OMF • Reduces interference to E3 busway and overhead transmission lines compared to other alternatives along E3 busway • Cost similar to ST3 Representative Project, but $200 million increase in SODO
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Higher low-income and minority populations than rest of the city • Higher elderly, LEP and disabled populations than rest of the city, with lower youth populations
Encourage equitable and sustainable urban growth	• Strong local land use plans in International District/Chinatown Station area, including rezoning around historic Chinatown • Greatest amount of potential equitable development opportunities compared to other alternatives due to greatest amount of property acquisitions; however, most zoned for manufacturing/ industrial uses, which may impact types of opportunities
Promote a healthy built, natural, and social environment	• No identified potential impacts to protected natural resources • Greatest potential for business displacements primarily in SODO and around International District/Chinatown Station compared to other alternatives • Closes Royal Brougham Way S to vehicle traffic • Freight access potentially affected by elevated guideway between 1st Avenue S and Occidental Avenue S

4TH AVENUE CUT-AND-COVER TUNNEL/STATION

ALTERNATIVE

SEGMENT
SODO AND CHINATOWN/ID



ROUTE DESCRIPTION

After crossing over the Spokane Street Viaduct (i.e., the approach to the West Seattle Bridge), this alternative would run on an elevated guideway along the E3 busway to a new elevated SODO Station adjacent to the existing at-grade SODO Station. The route would continue north along the SODO E3 busway in an elevated configuration. At approximately SW Massachusetts Street, the route would transition down to existing grade, then continue to a rebuilt, at-grade Stadium Station, which would serve the West Seattle to Everett line. The route would then continue at-grade across S Royal Brougham Way and tie into the existing light rail line to Everett and DSTT.

At approximately the location of the existing Stadium Station, the existing light rail line from Tacoma would transition into a new cut-and-cover tunnel that would continue under S Royal Brougham Way. The existing Stadium Station would be demolished and rebuilt to accommodate the new tunnel portal. The tunnel route would continue northwest under the West Seattle line at S Royal Brougham Way and then head north under 4th Avenue S. A new International District/ Chinatown Station would be constructed under 4th Avenue S via cut-and-cover methods. The tunnel would then continue in a cut-and-cover configuration along 4th Avenue S and transition to 5th Avenue S near James Street.

STATIONS

SODO (new)	New elevated immediately west of existing station for West Seattle line
Stadium (rebuilt existing)	Rebuilt existing at-grade and relocated on West Seattle line
International District/ Chinatown (existing)	Existing tunnel remains on West Seattle line
SODO (existing)	Existing at-grade remains on Ballard line
International District/ Chinatown (new)	New cut-and-cover tunnel station west of existing station under 4th Avenue S for Ballard line

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

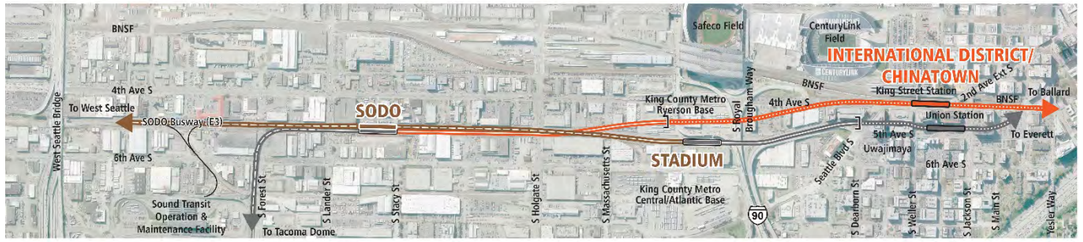
- None

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• At-grade crossings for existing Link light rail at S Lander Street, S Holgate Street and Royal Brougham Way S • Travel time estimate 3 to 4 minutes between SODO and International District/ Chinatown stations
Improve Downtown capacity for regional connectivity	• Facilitates spine segmentation • Does not preclude new light rail tunnel through downtown • Approximately 35,300 forecasted population and employment served in 2040
Connect regional centers	• SODO and Stadium stations located in Duwamish MIC; no regional growth centers in segment • Compatibility with future LRT extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• 4th Avenue S viaduct rebuild could increase implementation schedule • Substantial engineering and constructability constraints caused by rebuilding 4th Avenue S viaduct adjacent to BNSF Railway and existing transit tunnel • Yesler Bridge and King County Administration Building likely to be impacted • Higher cost approximately $600 million more than ST3 Representative Project • 4th Avenue S viaduct rebuild costs not included in ST3 financial plan or evaluation methodology
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Higher low-income and minority populations than rest of the city • Higher elderly, LEP and disabled populations than rest of the city, with lower youth populations
Encourage equitable and sustainable urban growth	• Strong local land use plans in Pioneer Square and International District/Chinatown Station areas, including rezoning around historic Chinatown • Some equitable development opportunities south of Airport Way S between International District/Chinatown and Stadium stations; property acquisitions along 4th Avenue S could create additional opportunities
Promote a healthy built, natural, and social environment	• No identified potential impacts to protected natural resources • Cut-and-cover construction would affect traffic on 4th Avenue S and require periodic closures and detours on other roadways • Temporary noise, vibration, and visual impacts on Chinatown/International District neighborhood would be reduced compared to other alternatives on 5th Avenue S • Higher potential for business displacements along 4th Avenue S, including King County Administration Building and social services facility compared to other alternatives

4TH AVENUE BORED TUNNEL/MINED STATION

ALTERNATIVE

SEGMENT
SODO AND CHINATOWN/ID



ROUTE DESCRIPTION

After crossing over the Spokane Street Viaduct (i.e., the approach to the West Seattle Bridge), this alternative would run on an elevated guideway along the E3 busway to a new elevated SODO Station adjacent to the existing at-grade SODO Station. The route would continue north along the SODO E3 busway in an elevated configuration. At approximately SW Massachusetts Street, the route would transition down to existing grade, then continue to the existing Stadium Station, which would serve the West Seattle to Everett line.

The existing at-grade SODO Station would serve the Ballard to Tacoma line. From there, the route would continue at grade, crossing under the elevated West Seattle line between S Holgate and S Massachusetts streets. It would then head into a bored tunnel, with the tunnel portal at the King County Metro Ryerson Base. The deep bored tunnel would then traverse under S Royal Brougham Way to 4th Avenue S. A new International District/Chinatown Station would be constructed under 4th Avenue S via mined methods. The tunnel would then continue in a bored configuration along 4th Avenue S and transition to 5th Avenue S near James Street.

STATIONS

SODO (new)	New elevated immediately west of existing station for West Seattle line
Stadium (existing)	Existing at-grade remains on West Seattle line
International District/ Chinatown (existing)	Existing tunnel remains on West Seattle line
SODO (existing)	Existing at-grade remains on Ballard line
International District/ Chinatown (new)	New mined tunnel station west of existing station under 4th Avenue S for Ballard line

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

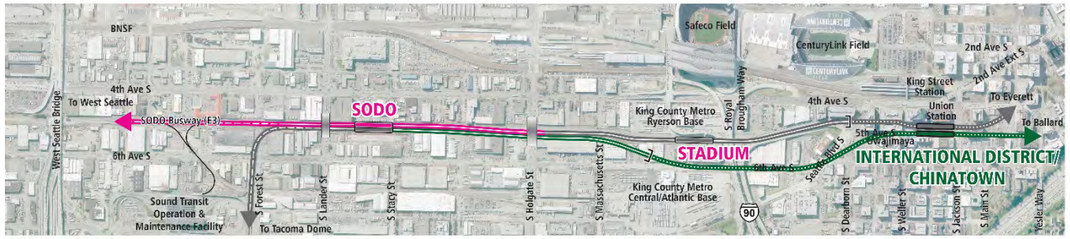
- Shifted Ballard line west of Stadium Station to avoid impacts to roadway ramp foundations

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• At-grade crossings for existing Link light rail at S Lander Street, S Holgate Street and Royal Brougham Way S • Travel time estimate 3 to 4 minutes between SODO and International District/ Chinatown stations
Improve Downtown capacity for regional connectivity	• Facilitates spine segmentation • Does not preclude new light rail tunnel through downtown • Approximately 35,300 forecasted population and employment served in 2040
Connect regional centers	• SODO and Stadium stations located in Duwamish MIC; no regional growth centers in segment • Compatibility with future LRT extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Partial 4th Avenue S viaduct rebuild and very deep mined International District/ Chinatown Station could increase implementation schedule • Does not facilitate special trackwork or provide reliable system operations • Substantial engineering and constructability constraints caused by partial rebuild of 4th Avenue S viaduct adjacent to BNSF Railway and existing transit tunnel • Higher cost approximately $500 million more than ST3 Representative Project • 4th Avenue S viaduct rebuild costs not included in ST3 financial plan or evaluation methodology
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Higher low-income and minority populations than rest of the city • Higher elderly, LEP and disabled populations than rest of the city, with lower youth populations
Encourage equitable and sustainable urban growth	• Strong local land use plans in Pioneer Square and International District/Chinatown Station areas, including rezoning around historic Chinatown • Deeper mined station not as convenient for ease of access and passenger transfers in comparison to shallower cut-and-cover stations • Equitable development opportunities south of Airport Way S between International District/Chinatown and Stadium stations east of I-90 bus lane
Promote a healthy built, natural, and social environment	• No identified potential impacts to protected natural resources • Most disruptive construction methods and partial replacement of viaduct structure compared to other alternatives, which would result in full closure of 4th Avenue S and traffic impacts on other roadways including displacement of Ryerson Bus Base • Temporary noise, vibration, and visual impacts on Chinatown/International District neighborhood would be reduced compared to other alternatives on 5th Avenue S

5TH AVENUE BORED TUNNEL/MINED STATION

ALTERNATIVE

SEGMENT
SODO AND CHINATOWN/ID



ROUTE DESCRIPTION

Once across the Spokane Street Viaduct (i.e., the approach to the West Seattle Bridge) via an elevated guideway, this route would travel along the SODO E3 busway to S Forest Street and transition to existing grade south of S Lander Street. It would then enter a new at-grade SODO Station and tie into the existing light rail line to Everett at S Holgate Street.

North of the existing SODO Station, the existing light rail line from Tacoma would transition to a new line to the east. The route would then enter a deep bored tunnel, with the portal for the new downtown transit tunnel located near SW Massachusetts Street between the SODO E3 busway and 6th Avenue S. The route would then continue north beneath 6th Avenue S, then transition to 5th Avenue S into a new International District/ Chinatown tunnel station that would be mined under 5th Avenue S.

STATIONS

SODO (new)	New at-grade immediately west of existing station for West Seattle line
Stadium (existing)	Existing at-grade remains on West Seattle line
International District/ Chinatown (existing)	Existing tunnel remains on West Seattle line
SODO (existing)	Existing at-grade remains on Ballard line
International District/ Chinatown (new)	New mined tunnel station adjacent to existing station under 5th Avenue S for Ballard line

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

- None

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• New grade separated roadway crossings of S Lander Street and S Holgate Street • Travel time estimate 3 to 4 minutes between SODO and International District/ Chinatown stations
Improve Downtown capacity for regional connectivity	• Facilitates spine segmentation • Does not preclude new light rail tunnel through downtown • Approximately 35,900 forecasted population and employment served in 2040
Connect regional centers	• SODO and Stadium stations located in Duwamish MIC; no regional growth centers in segment • Compatibility with future LRT extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Very deep mined International District/Chinatown Station could increase ST3 implementation schedule • May not facilitate all desired special trackwork for track interconnections, but more opportunities than ST3 Representative Project • Bored tunnel and mined International District/Chinatown Station likely minimizes impacts to 5th Avenue S • Bored tunnel and portal in poor soils and high-water table • Cost similar to ST3 Representative Project
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Higher low-income and minority populations than rest of the city • Higher elderly, LEP and disabled populations than rest of the city, with lower youth populations
Encourage equitable and sustainable urban growth	• Strong local land use plans in International District/Chinatown Station area, including rezoning around historic Chinatown • Deeper mined station not as convenient for ease of access and passenger transfers in comparison to shallower cut-and-cover stations • Equitable development opportunities south of Airport Way S between International District/Chinatown and Stadium stations east of I-90 bus lane; property acquisitions along 6th Avenue S could create additional opportunities
Promote a healthy built, natural, and social environment	• No identified potential impacts to protected natural resources • Greater business displacements would occur primarily around the S Massachusetts Street tunnel portal compared to other alternatives • Least disruptive construction effects and lane closures of 5th Avenue S alignments and stations compared to other alternatives • Grade separations of S Lander and S Holgate streets would improve east-west mobility, including truck freight mobility • No impacts to Royal Brougham Way S expected

4.2.1 SODO and Chinatown/International District Segment Summary Findings

The SODO and Chinatown/International District Segment has several unique transit operational challenges for both bus and rail services that directly influence the design of the WSBLE Project. These operational challenges include how the WSBLE Project would connect with Sound Transit's OMF, the convergence of the current Link LRT line, the addition of the future East Link LRT line, and the switching requirements (referred to as spine segmentation) that would enable the West Seattle line to operate north to Everett, and the Ballard line to run south to Tacoma. Furthermore, while the new downtown transit tunnel is being constructed, the SODO and Chinatown/International District Segment is a potential interim terminus for the LRT line to West Seattle. In addition to the existing and future light rail lines, King County Metro Transit's (KCM) E3 busway in SODO is an important operational component for the region's bus network, particularly bus routes serving southern King County. The strategic importance of the SODO E3 busway as a north-south transit spine is further emphasized by the connection to KCM's Ryerson Base.

Utilities also present several challenges in the SODO and Chinatown/International District Segment. Seattle City Light (SCL), the primary electrical power provider to the region, has high-voltage transmission lines and transmission substations in the SODO and Chinatown/International District Segment. The SCL South Service Center on 4th Avenue S is immediately south of the West Seattle Bridge/Spokane Street Viaduct. In addition to electrical transmission, several high-pressure gas mains, consolidated sewers, and water mains are found throughout the SODO region to serve the Port of Seattle and auxiliary businesses and services.

Finally, the SODO and Chinatown/International District Segment has experienced rapid land use change over the past two decades, with the expansion of the stadium district and growth of commercial enterprises converting manufacturing, industrial, and warehouse buildings into mixed-use development. The city of Seattle has enacted zoning classifications and special districts (most notably the MICs) to preserve and protect industrial lands in SODO and Interbay. The SODO and Chinatown/International District Segment continues to see a heavy volume of daily freight traffic, both multiaxle trucks and freight railroad activity, serving the Port of Seattle. Maintaining freight movement and commerce activities during and after construction of the WSBLE Project will be an important consideration in the refinement of alternatives during the Level 3 Screening.

General discussion and feedback from the public, SAG and ELG included the following common themes for the Level 2 alternatives evaluation and screening:

- Continued interest in analysis of interim terminus options to avoid short-term forced transfer at SODO Station, if possible
- Interest in improved mobility options in SODO
- Strong interest in resolving limited bus base capacity
- Desire to recognize historical context of impacts to community
- Interest in interaction with community about short-term versus long-term impacts and benefits
- Interest in activating Union Station
- Concern with effects of displacing Ryerson Bus Base and effects on bus use of E3 busway
- Concern with poor transfer environment and customer experience with deep mined stations
- Desire for additional engagement with the community on options for the Chinatown/International District Station

Table 4-4 (SODO and Chinatown/International District Segment ELG Screening Recommendations) identifies the alternatives carried forward for additional design refinement and evaluation as part of the Level 3 Screening. Additional evaluation information and results for the SODO alternatives may be found in **Appendix C** (SODO and Chinatown/International District Segment Level 2 Evaluation Matrices).

Table 4-4 SODO and Chinatown/International District Segment ELG Screening Recommendations

Level 2 Alternative	Key Findings	Public Feedback and Common Themes	Carry Forward into Level 3	Suggested Refinements for Level 3
ST3 Representative Project	• Carries forward into Level 3 as ST3 Representative Project	• Concern about cut-and-cover tunnel construction effects	Yes	--
Massachusetts Tunnel Portal	• Shallow cut-and-cover station under 5th Avenue with easy rider access/transfers • Construction effects and parking lane closures on 5th Avenue in station area • Costs approximately $200 million less than ST3 Representative Project • New at-grade SODO Station on E3 busway at Lander • Transfer at existing SODO Station • Bus operations on E3 busway displaced • New grade separated roadway crossings (Lander, Holgate) improve existing rail/traffic/freight operations • Property effects at tunnel portal site • Avoids impacts to Ryerson Base	• General support for surface alignment • Support for new roadway overpasses at Lander and Holgate • Explore shifting existing and new SODO stations closer to Lander • Support for reduced construction effects and shallower station	Yes	--
Surface E3	• Shallow cut-and-cover station under 5th Avenue and easy rider access/transfers • Construction effects and parking lane closures on 5th Avenue in station area • Costs approximately $400 million less than ST3 Representative Project • New at-grade SODO Station on E3 busway at Lander • Transfer at existing SODO Station • Bus operations on E3 busway displaced • New grade separated roadway crossings (Lander, Holgate) improve existing rail/traffic/freight operations • Avoids impacts to Ryerson Base	• General support for surface alignment • Support for new roadway overpasses at Lander and Holgate • Some support for second Stadium Station • Explore shifting existing and new SODO stations closer to Lander • Concern about cut-and-cover tunnel construction effects	Yes	--
Occidental Avenue	• New elevated SODO Station on Occidental Avenue at Lander Street • Transfer at existing Stadium Station • Long span bridges over BNSF tracks and longer track connection to maintenance facility • Bus operations on E3 busway partially displaced • Property effects along Occidental, BNSF crossings and maintenance facility connection • Costs approximately $200 million more than ST3 Representative Project	• Some support for locating new SODO Station further west • Some concern about freight mobility and property effects that would result from a long, elevated structure over the BNSF railroad	No	--
4th Avenue Cut-and-Cover Tunnel/Station	• Shallow cut-and-cover station under 4th Avenue with easy rider access/transfers • Major engineering/constructability constraints (4th Avenue viaduct demolition/rebuild, active BNSF railway, existing transit tunnel, etc.) • Large property effects (King County Administration Building) • Costs approximately $600 million more than ST3 Representative Project; requires funding partnerships for 4th Avenue Viaduct re-build costs Increased schedule risk compared to ST3 Representative Project	• Support for closer proximity to King Street Station, reduced Chinatown/International District effects along 5th Avenue and shallower station • Concern about traffic detours	Yes	--

Table 4-4 SODO and Chinatown/International District Segment ELG Screening Recommendations

Level 2 Alternative	Key Findings	Public Feedback and Common Themes	Carry Forward into Level 3	Suggested Refinements for Level 3
4th Avenue Bored Tunnel/Mined Station	• Deep mined station (approximately 200 feet) under 4th Avenue with poor rider access/transfers • Major engineering/constructability constraints (4th Avenue viaduct demolition/rebuild, active BNSF railway, existing transit tunnel, etc.) • Large property effects (Ryerson Base for tunnel portal site) • Results in very deep Midtown Station (approximately 250 feet) • Costs approximately $500 million more than ST3 Representative Project; requires funding partnerships for 4th Avenue Viaduct re-build costs • Increased schedule risk compared to ST3 Representative Project	• Support for closer proximity to King Street Station and reduced Chinatown/International District effects along 5th Avenue • Concern about traffic detours and access due to deep station	Yes	--
5th Avenue Bored Tunnel/Mined Station	• Deep mined station (approximately 200 feet) under 5th Avenue with poor rider access/transfers • Less construction effects, parking closures on 5th Avenue with mined station • Some property effects (for mined station access shaft) • Results in very deep Midtown Station (approximately 250 feet) • Cost similar to ST3 Representative Project • Somewhat higher schedule risk compared to ST3 Representative Project	• Support for reduced construction effects • Concern about access due to deep station	Yes	--

4.3 Downtown Segment Alternatives Evaluation

The Downtown Segment contained the following four alternatives during the Level 2 Screening:

- ST3 Representative Project
- 5th/Harrison
- 6th/Boren/Roy
- 5th/Terry/Roy/Mercer

These alternatives are delineated on **Figure 4-4** (Downtown Segment—Level 2 Alternatives), with **Table 4-5** (Downtown Segment—Level 2 Alternatives Evaluation Summary) summarizing the evaluation results. Individual descriptions and evaluation of each alternative are provided in the pages that follow. Refer to **Appendix D** (Downtown Segment Level 2 Evaluation Matrices) for the detailed findings of each evaluation measure in this segment.

Figure 4-4 Downtown Segment—Level 2 Alternatives

Table 4-5 Downtown Segment—Level 2 Alternatives Evaluation Summary

Purpose and Need / Evaluation Criteria	Alternatives			
	ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.				
Potential service interruptions and recoverability	High	High	High	High
LRT travel times (minutes)	8 to 9	8 to 9	8 to 9	8 to 9
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.				
LRT network integration	Medium	Medium	Medium	Medium
Passenger carrying capacity in downtown	Medium	Medium	Medium	Medium
Ridership potential (2040 population/employment) (1)	167,800	163,300	176,700	176,700
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.				
Station proximity to PSRC-designated regional growth centers	3	3	3	3
Station proximity to PSRC-designated manufacturing/industrial centers	N/A	N/A	N/A	N/A
Accommodates future LRT extension beyond ST3	Medium	Medium	Medium	Medium
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.				
Mode, route and general station locations per ST3	High	High	High	High
Potential ST3 implementation schedule effects	High	High	High	High
Potential ST3 operating plan effects	High	High	High	High
Engineering constraints	Low	Low	Medium	Low
Constructability issues	Low	Low	Low	Low
Operational constraints	Medium	Medium	High	Medium
Conceptual capital cost comparison (2017$)	--	$200 million increase	Similar	$200 million increase
Operating cost impacts	Medium	Medium	Medium	Medium
Expand mobility for the corridor and region's residents, which include transit dependent, low-income and minority populations.				
Opportunities for low-income and minority populations (activity nodes/subsidized rental units)	Medium	Medium	Medium	Medium
	27%	29%	24%	26%
Low-income population (1/2)	28% / 30%	29% / 30%	28% / 30%	28% / 30%
Minority population (1/2) (4)	36% / 36%	36% / 36%	34% / 36%	35% / 36%
Youth population (under 18) (1/2)	4% / 4%	4% / 4%	4% / 4%	4% / 4%
Elderly population (65 and over) (1/2)	14% / 13%	14% / 13%	15% / 13%	14% / 13%
LEP population (1/2)	5% / 5%	5% / 5%	5% / 5%	5% / 5%
Disabled population (1/2)	12% / 12%	12% / 12%	12% / 12%	12% / 12%

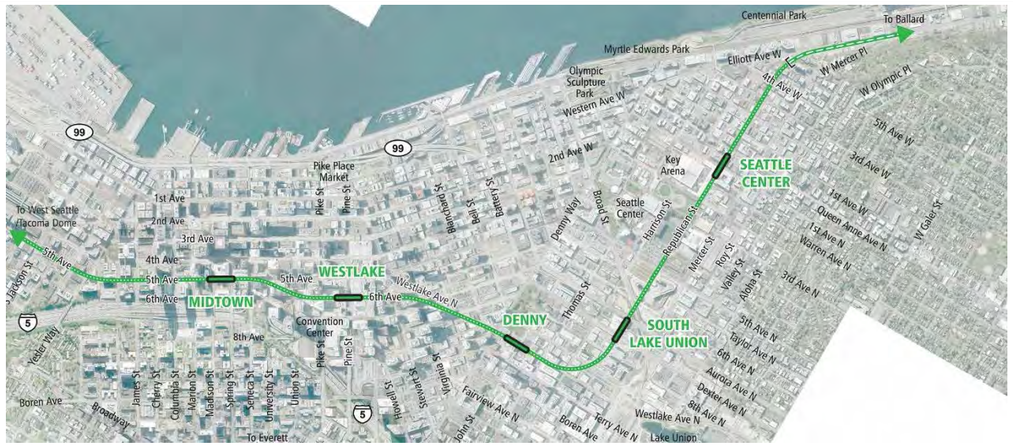
Table 4-5 Downtown Segment—Level 2 Alternatives Evaluation Summary

Purpose and Need / Evaluation Criteria	Alternatives			
	ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.				
Compatibility with Seattle designated Urban Centers and Villages (1)	95%	96%	91%	92%
Station locations consistent with current local land use plans	High	High	High	High
Activity nodes served (1)	171	171	169	168
Passenger transfers	Low	Medium	Medium	Medium
Bus/rail and rail/rail integration (1)	Low	Medium	Low	Medium
Bicycle accessibility (1)	23%	24%	23%	23%
Pedestrian and persons with limited mobility accessibility (1)	High	High	High	High
Development potential (1)	12%	12%	12%	12%
Equitable development opportunities	Low	High	Medium	Medium
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.				
NRHP listed or eligible historic properties and Seattle City Landmarks	31	35	23	34
Potential archaeological resources	Low	Low	Low	Low
Parks and recreational resources effects (acres)	0	0	1.1	0
Water resources effects (acres)	0	0	0	0
Fish and wildlife habitat effects (acres)	0	0	1.1	0
Hazardous materials sites	18	12	23	18
Visual effects (miles)	0	0	< 0.1	0
Noise and vibration sensitive receivers	High	Medium	Medium	High
Number of properties potentially affected	Medium	Medium	Medium	Medium
Number of potential residential unit displacements	Medium	High	Low	Low
Square feet of potential business displacements	High	Low	High	High
Construction impacts	Medium	Low	Medium	High
Burden on minority and low-income populations	Medium	Medium	Medium	Medium
Traffic circulation and access	High	High	High	High
Transportation facilities	Medium	Low	High	Medium
Freight movement and access on land and water	High	High	High	High
Business and commerce effects	High	Low	Medium	Medium

Notes: (1) Within station walksheds; (2) Within 15-minute ride on connecting high frequency transit; (3) N/A = Measure not applicable to this segment; (4) Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native

ST3 REPRESENTATIVE PROJECT

ALTERNATIVE | *SEGMENT* **DOWNTOWN**



ROUTE DESCRIPTION

The ST3 Representative Project would operate in a new rail-only tunnel from the International District/Chinatown District to Lower Queen Anne in downtown Seattle. The tunnel route would travel beneath 5th Avenue to Seneca Street, transition to 6th Avenue at University Street, and then turn under Westlake Avenue to John Street. From there, the tunnel route would turn west under Republican Street to Elliott Avenue W. The north tunnel portal would be located near Republican Street and Elliott Avenue W.

CHANGES TO ALTERNATIVE FROM LEVEL 1

- Shifted South Lake Union Station east and refined route alignment to avoid SR 99 and sewer conflict
- Shifted Denny Station south to increase station spacing

STATIONS

Midtown	Tunnel beneath 5th Avenue between Madison and Spring streets
Westlake	Tunnel beneath 6th Avenue connecting with existing Westlake Station at Pine Street
Denny	Tunnel beneath Westlake Avenue and John Street
South Lake Union	Tunnel beneath Republican Street between Dexter and Aurora avenues N
Seattle Center	Tunnel beneath Republican Street at 1st Avenue N

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated • Travel time estimate between 8 and 9 minutes for route between International District/Chinatown and Smith Cove stations
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity • Includes new light rail tunnel through downtown • Approximately 167,800 forecasted population and employment served in 2040
Connect regional centers	• Serves three regional growth centers (Seattle Central Business District [CBD], South Lake Union, Uptown Queen Anne); no reginal MICs in segment • Compatibility with future LRT extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • Tunneling under buildings would likely require measures to control ground settlement, as well as foundation tiebacks of existing buildings • Tunneling may affect abandoned UPRR and sewer tunnels • Challenging construction of large span, mined Midtown and Westlake stations
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Similar low-income and minority populations as rest of the city • Similar elderly, LEP and disabled populations as rest of the city, with lower youth populations
Encourage equitable and sustainable urban growth	• All five stations located in areas with supportive local land use plans • South Lake Union Station at Republican Street/SR 99 creates difficult passenger transfer environment with restricted bus access • Limited equitable development opportunities near all downtown stations
Promote a healthy built, natural, and social environment	• Potential impacts to historic properties in downtown • No identified potential impacts to protected natural resources • Potential residential and business displacements likely for north tunnel portal and entrances to underground stations • Temporary traffic, visual, noise and vibration construction impacts limited to areas around tunnel portal and stations

5TH AVENUE/HARRISON

ALTERNATIVE | *SEGMENT* **DOWNTOWN**

ROUTE DESCRIPTION

This alternative would also operate in a new rail-only tunnel from the International District/ Chinatown District to Lower Queen Anne in downtown Seattle. The tunnel route would run north under 5th Avenue to Westlake Avenue. From there, it would head north along Westlake Avenue to John Street and then turn west beneath Harrison Street to Elliott Avenue W. The north tunnel portal would be located near Harrison Street and Elliott Avenue W.

CHANGES TO ALTERNATIVE FROM LEVEL 1

- Shifted South Lake Union Station east and refined route alignment to avoid SR 99 and sewer conflict
- Shifted Denny Station south to increase station spacing

STATIONS

Midtown	Tunnel beneath 5th Avenue between Madison and Spring streets
Westlake	Tunnel beneath 5th Avenue connecting with existing Westlake Station between Pike and Pine streets
Denny	Tunnel beneath Westlake Avenue south of Denny Way
South Lake Union	Tunnel beneath Harrison Street between Dexter and Aurora avenues N
Seattle Center	Tunnel beneath Harrison Street between 1st and Queen Anne avenues N

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated • Travel time estimate between 8 and 9 minutes for route between International District/Chinatown and Smith Cove stations
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity • Includes new light rail tunnel beneath downtown • Approximately 163,300 forecasted population and employment served in 2040
Connect regional centers	• Serves three regional growth centers (Seattle CBD, South Lake Union, Uptown Queen Anne); no reginal MICs in segment • Compatibility with future LRT extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • Fewer utility crossings than ST3 Representative Project, but likely more building tieback conflicts • Crosses under prominent buildings such as Seattle Center and Key Arena • Tight radius curve between Denny and South Lake Union stations, resulting in reduced speed • Higher cost approximately $200 million more than ST3 Representative Project
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Similar low-income and minority populations as rest of the city • Similar elderly, LEP and disabled populations as rest of the city, with lower youth populations
Encourage equitable and sustainable urban growth	• All five stations located in areas with supportive local land use plans • Better bus/rail integration opportunities at South Lake Union Station on Harrison Street compared to other alternatives, but more limited for Seattle Center Station • Equitable development opportunities primarily at north end of segment with more land potentially available for development
Promote a healthy built, natural, and social environment	• Potential impacts to historic properties in downtown • No identified potential impacts to protected natural resources • Highest square footage of potential business displacements along Harrison Street compared to other alternatives • Most disruptive temporary construction impacts in residential neighborhoods • Temporary traffic, visual, noise and vibration construction impacts limited to areas around tunnel portal and stations

6TH AVENUE/BOREN/ROY

ALTERNATIVE — *SEGMENT* **DOWNTOWN**

ROUTE DESCRIPTION

This alternative would also operate in a new rail-only tunnel from the International District/ Chinatown District to Lower Queen Anne in downtown Seattle. The tunnel route would run under 5th Avenue and transition to 6th Avenue at Yesler Way. It would then continue north under 6th Avenue to Pine Street. The tunnel route would transition to Boren Avenue to John Street and then turn west and follow Roy Street to Elliott Avenue W. The north tunnel portal would be in Kinnear Park near Elliott Avenue W.

CHANGES TO ALTERNATIVE FROM LEVEL 1

- Shifted South Lake Union Station east and refined route alignment to avoid SR 99 and sewer conflict

STATIONS

Midtown	Tunnel beneath 6th Avenue between Madison and Spring streets
Westlake	Tunnel beneath 6th Avenue connecting with existing Westlake Station at Pine Street
Denny	Tunnel beneath Boren Avenue at John Street
South Lake Union	Tunnel beneath Roy Street between Dexter and Aurora avenues N
Seattle Center	Tunnel beneath Roy Street between 1st and Queen Anne avenues N

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated • Travel time estimate between 8 and 9 minutes for route between International District/Chinatown and Smith Cove stations
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity • Includes new light rail tunnel beneath downtown • Approximately 176,700 forecasted population and employment served in 2040
Connect regional centers	• Serves three regional growth centers (Seattle CBD, South Lake Union, Uptown Queen Anne); no reginal MICs in segment • Compatibility with future LRT extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • North portal located in landslide prone topography with potentially unstable slopes • Avoids building foundation tiebacks on 5th Avenue S • Largest radius curve compared to other alternatives, resulting in potentially higher speeds • Cost similar to ST3 Representative Project
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Similar low-income and minority populations as rest of the city • Similar elderly, LEP and disabled populations as rest of the city, with lower youth populations
Encourage equitable and sustainable urban growth	• All five stations located in areas with supportive local land use plans • Lower bus/rail integration opportunities with Denny Station on Boren Avenue and Seattle Center Station on Roy Street compared to other alternatives • Equitable development opportunities near South Lake Union Station
Promote a healthy built, natural, and social environment	• Potential impacts to historic properties in downtown • Potential permanent park and wildlife habitat impacts to Kinnear Park at north tunnel portal • Higher potential residential displacements around north tunnel portal compared to other alternatives • Temporary traffic, visual, noise and vibration construction impacts limited to areas around tunnel portal and stations

5TH/TERRY/ROY/MERCER

ALTERNATIVE — *SEGMENT* **DOWNTOWN**

ROUTE DESCRIPTION

This alternative would also operate in a new rail-only tunnel from the International District/ Chinatown District to Lower Queen Anne in downtown Seattle. The tunnel route would run north under 5th Avenue to Westlake Avenue. From there, it would transition to Terry Avenue N to Republican Street and then turn west and follow Roy Street. The tunnel would then transition to Mercer Street at around 5th Avenue N and then follow Mercer Street to Elliott Avenue W. The north tunnel portal would be on the western edge of Kinnear Park near Elliott Avenue W.

CHANGES TO ALTERNATIVE FROM LEVEL 1

- New alternative in Level 2

STATIONS

Midtown	Tunnel beneath 5th Avenue between Madison and Spring streets
Westlake	Tunnel beneath 5th Avenue connecting with existing Westlake Station between Pike and Pine streets
Denny	Tunnel beneath Terry Avenue N at John Street
South Lake Union	Tunnel beneath Roy Street between Dexter and Aurora avenues N
Seattle Center	Tunnel beneath Mercer Street between 1st and Queen Anne avenues N

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated • Travel time estimate between 8 and 9 minutes for route between International District/Chinatown and Smith Cove stations
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity • Includes new light rail tunnel beneath downtown • Approximately 176,700 forecasted population and employment served in 2040
Connect regional centers	• Serves three regional growth centers (Seattle CBD, South Lake Union, Uptown Queen Anne); no reginal MICs in segment • Compatibility with future LRT extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • North portal located in landslide prone topography with potentially unstable slopes • Likely requires measures to control ground settlement, as well as foundation tiebacks of existing buildings on 5th Avenue S • Fewer vertical profile changes compared to ST3 Representative Project • Higher cost approximately $200 million more than ST3 Representative Project
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Similar low-income and minority populations as rest of the city • Similar elderly, LEP and disabled populations as rest of the city, with lower youth populations
Encourage equitable and sustainable urban growth	• All five stations located in areas with supportive local land use plans • Average to good transportation integration opportunities, but more limited for Denny Station on Terry Avenue than on Westlake Avenue • Equitable development opportunities near South Lake Union Station
Promote a healthy built, natural, and social environment	• Potential impacts to historic properties in downtown • No identified potential impacts to protected natural resources • Higher potential residential displacements around north tunnel portal compared to other alternatives • Temporary traffic, visual, noise and vibration construction impacts limited to areas around tunnel portal and stations

4.3.1 Downtown Segment Summary Findings

Constructability, construction complexity, and transit connectivity are three key themes that emerged from the Level 2 Screening. The construction of any new transit project beneath downtown Seattle presents substantial challenges given the dense development patterns and land use intensities. Different tunnel types, structural elements of existing buildings (particularly high-rise office buildings but also retaining walls and tiebacks), soil conditions, utilities, passenger transfers, and maintaining accessibility to downtown during construction of the WSBLE Project are difficult challenges for any alternative. These and other challenges will be evaluated further during the Level 3 Screening.

General discussion and feedback from the public, SAG and ELG included the following common themes for the Level 2 alternatives evaluation and screening:

- Transfers at Westlake Station will be critical to serve region well
- Consider pedestrian safety upgrades, especially at South Lake Union Station near Mercer Street

Table 4-6 (Downtown Segment ELG Screening Recommendations) identifies the alternatives carried forward for additional design refinement and screened as part of the Level 3 Screening. Additional evaluation information and results for the Downtown alternatives may be found in **Appendix D** (Downtown Segment Level 2 Evaluation Matrices).

Table 4-6 Downtown Segment ELG Screening Recommendations

Level 2 Alternative	Key Findings	Public Feedback and Common Themes	Carry Forward into Level 3	Suggested Refinements for Level 3
ST3 Representative Project	• Carries forward into Level 3 as ST3 Representative Project	--	Yes	--
5th Avenue/Harrison	• Better bus/rail integration opportunity at South Lake Union Station on Harrison Street • Higher property effects due to tunnel portal location on Harrison Street west of Seattle Center • Engineering challenges with tunneling under Key Arena • Approximately $200 million more than ST3 Representative Project	• Support for this alternative with Seattle Center Station located at Republican Street	Yes	• Seattle Center Station located at Republican Street
6th Avenue/Boren/Roy	• Avoids building tie-backs on 5th Avenue, SR 99 portal and large sewer pipes in the vicinity of SR 99 • More constrained Denny Station location on Boren Avenue • Seattle Center station location on Roy is two blocks from Key Arena • Lower bus/rail integration opportunity at Seattle Center Station on Roy Street • Comparable cost to ST3 Representative Project	• Limited support for Denny Station at Boren (due to steep grade) • Limited support for South Lake Union Station at Roy Street due to access restrictions to east • Interest in maintaining 6th Avenue route through Downtown	No	--
5th/Terry/Roy/Mercer	• Avoids SR 99 portal and large sewer pipes in the vicinity of SR 99 • Seattle Center Station location on Mercer Street is one block from Key Arena • Approximately $200 million more than ST3 Representative Project	• Some support for Denny Station at Terry • Interest in 6th Avenue route through Downtown	Yes	• 6th Avenue route through Downtown

4.4 Interbay/Ballard Segment Alternatives Evaluation

The Interbay/Ballard Segment contained the following eight alternatives during the Level 2 Screening:

- ST3 Representative Project
- 15th/Fixed Bridge/15th
- 20th/Fixed Bridge/17th
- 20th/Tunnel/15th
- Central Interbay/Movable Bridge/14th
- Armory Way/Tunnel/14th
- Central Interbay/Fixed Bridge/14th
- Central Interbay/Tunnel/15th

These alternatives are delineated on **Figure 4-5** (Interbay/Ballard Segment—Level 2 Alternatives), with **Table 4-7** (Interbay/Ballard Segment—Level 2 Alternatives Evaluation Summary) summarizing the evaluation results. Individual descriptions and evaluation of each alternative are provided in the pages that follow. Refer to **Appendix E** (Interbay/Ballard Segment Level 2 Evaluation Matrices) for the detailed findings of each evaluation measure in this segment.

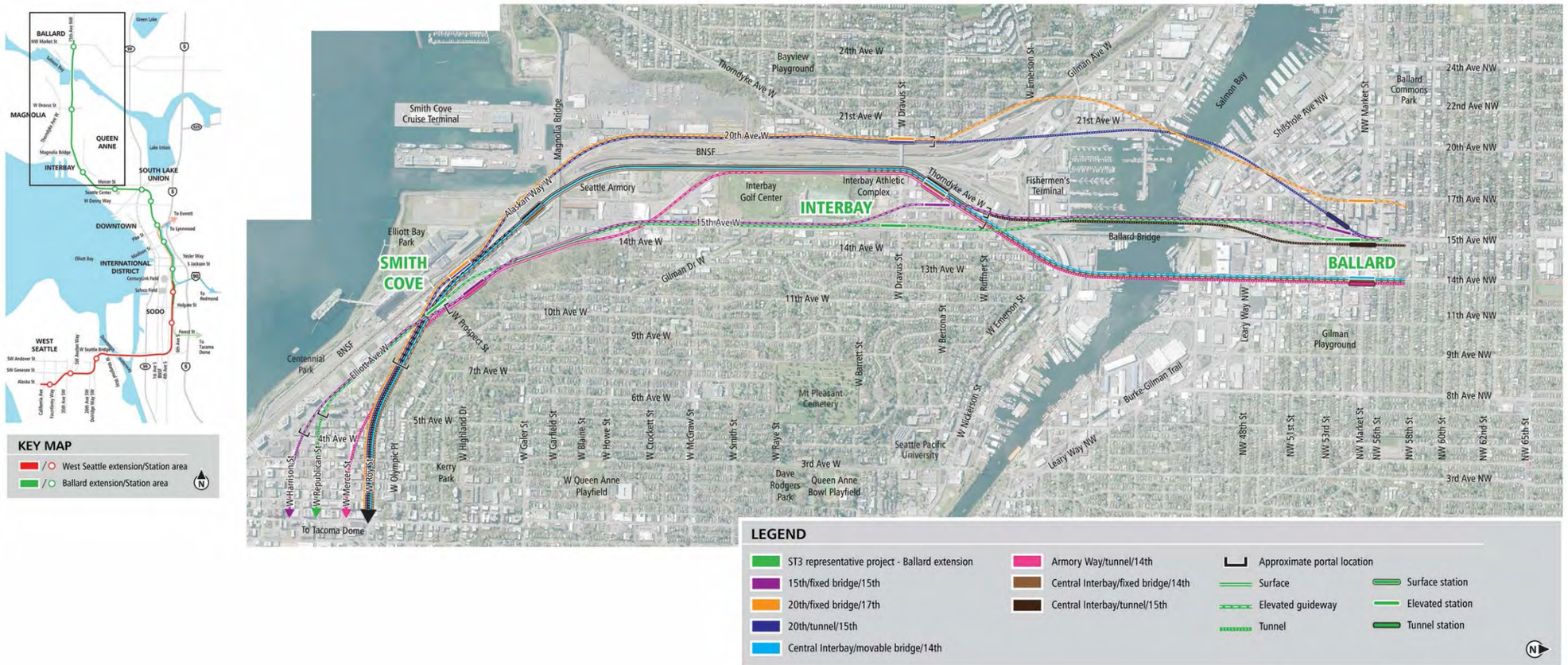


Figure 4-5 Interbay/Ballard Segment—Level 2 Alternatives

Table 4-7 Interbay/Ballard Segment—Level 2 Alternatives Evaluation Summary

Purpose and Need / Evaluation Criteria	Alternatives							
	ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th	Central Interbay/ Movable Bridge/14th	Armory Way/ Tunnel/14th	Central Interbay/ Fixed Bridge/14th	Central Interbay/ Tunnel/15th
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.								
Potential service interruptions and recoverability	Low	High	High	High	Low	High	High	High
LRT travel times (minutes)	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.								
LRT network integration	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Passenger carrying capacity in downtown	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Ridership potential (2040 population/employment) (1)	17,200	16,700	19,000	17,800	15,400	16,400	15,400	16,500
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.								
Station proximity to PSRC-designated regional growth centers	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Station proximity to PSRC-designated manufacturing/industrial centers	1	1	1	1	1	1	1	1
Accommodates future LRT extension beyond ST3	Medium	Medium	Low	High	Medium	High	Medium	High
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.								
Mode, route and general station locations per ST3	High	High	High	High	High	High	High	High
Potential ST3 implementation schedule effects	High	High	High	High	High	High	High	High
Potential ST3 operating plan effects	Low	High	High	High	Low	High	High	High
Engineering constraints	Medium	Medium	Medium	Low	High	Low	High	Low
Constructability issues	Medium	Medium	Medium	Low	High	Low	High	Low
Operational constraints	Low	High	High	High	Low	High	High	High
Conceptual capital cost comparison (2017$)	--	$200 million increase	$500 million increase	$700 million increase	$200 million increase	$300 million increase	$100 million increase	$500 million increase
Operating cost impacts	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Expand mobility for the corridor and region's residents, which include transit dependent, low-income and minority populations.								
Opportunities for low-income and minority populations (activity nodes/subsidized rental units)	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	8%	9%	8%	8%	8%	8%	8%	9%
Low-income population (1/2)	19% / 18%	20% / 18%	20% / 18%	20% / 18%	19% / 18%	19% / 18%	19% / 18%	19% / 18%
Minority population (1/2) (4)	21% / 20%	21% / 20%	21% / 20%	21% / 20%	21% / 20%	21% / 20%	21% / 20%	21% / 20%
Youth population (under 18) (1/2)	9% / 12%	11% / 12%	11% / 12%	11% / 12%	12% / 12%	11% / 12%	12% / 12%	10% / 12%
Elderly population (65 and over) (1/2)	10% / 10%	10% / 10%	10% / 10%	10% / 10%	9% / 10%	9% / 10%	9% / 10%	10% / 10%
LEP population (1/2)	4% / 3%	4% / 3%	4% / 3%	4% / 3%	3% / 3%	3% / 3%	3% / 3%	3% / 3%
Disabled population (1/2)	9% / 8%	9% / 8%	9% / 8%	9% / 8%	8% / 8%	8% / 8%	8% / 8%	9% / 8%

Table 4-7 Interbay/Ballard Segment—Level 2 Alternatives Evaluation Summary

Purpose and Need / Evaluation Criteria	Alternatives							
	ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th	Central Interbay/ Movable Bridge/14th	Armory Way/ Tunnel/14th	Central Interbay/ Fixed Bridge/14th	Central Interbay/ Tunnel/15th
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.								
Compatibility with Seattle designated Urban Centers and Villages (1)	35%	34%	38%	31%	26%	28%	26%	36%
Station locations consistent with current local land use plans	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Activity nodes served (1)	26	32	36	33	24	23	24	35
Passenger transfers	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Bus/rail and rail/rail integration (1)	High	Medium	Medium	High	High	High	High	High
Bicycle accessibility (1)	19%	19%	19%	19%	17%	19%	17%	18%
Pedestrian and persons with limited mobility accessibility (1)	Low	Medium	High	High	Low	Medium	Low	Medium
Development potential (1)	34%	34%	37%	35%	33%	33%	33%	34%
Equitable development opportunities	Low	High	Low	Low	Medium	Medium	Medium	High
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.								
NRHP listed or eligible historic properties and Seattle City Landmarks	5	7	3	3	3	2	3	3
Potential archaeological resources	Low	Low	Low	Low	Low	Low	Low	Low
Parks and recreational resources effects (acres)	0.2	1	0.9	0.9	4.2	3.9	4.2	3.9
Water resources effects (acres)	0.7	0.6	0	0	0.7	0	0.4	0
Fish and wildlife habitat effects (acres)	11	11	0.5	0.5	0.5	11.4	0.5	0.5
Hazardous materials sites	11	15	11	11	16	12	16	12
Visual effects (miles)	1.2	0.3	0.6	0.1	0.7	0.8	0.7	0.6
Noise and vibration sensitive receivers	High	High	Low	Medium	High	High	High	High
Number of properties potentially affected	Medium	Low	Low	High	High	High	High	High
Number of potential residential unit displacements	High	Low	Low	Medium	Medium	High	Medium	High
Square feet of potential business displacements	Medium	Medium	Medium	High	Medium	High	Medium	Low
Construction impacts	Low	Medium	Low	Medium	High	High	High	Medium
Burden on minority and low-income populations	High	High	High	High	High	High	High	High
Traffic circulation and access	Low	Medium	Medium	High	Medium	High	Medium	High
Transportation facilities	Medium	High	Low	Medium	Medium	High	Medium	Medium
Freight movement and access on land and water	Low	Medium	Medium	Medium	Medium	High	Medium	High
Business and commerce effects	Low	Low	Medium	High	Medium	High	Medium	Medium

Notes: (1) Within station walksheds; (2) Within 15-minute ride on connecting high frequency transit; (3) N/A = Measure not applicable to this segment; (4) Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native

ST3 REPRESENTATIVE PROJECT

ALTERNATIVE | *SEGMENT* **INTERBAY/BALLARD**

ROUTE DESCRIPTION

The ST3 Representative Project would emerge from the downtown tunnel at Republican Street in an elevated structure. The elevated route would then transition to an at-grade guideway between the Queen Anne hillside and Elliott Avenue W, to 15th Avenue W at W Armory Way. North of W Armory Way, it would transition to an elevated structure, travel down 15th Avenue W and cross over Salmon Bay via a movable bridge west of the existing Ballard Bridge. Once across Salmon Bay, the elevated route would follow 15th Avenue NW and end near 15th Avenue NW and NW Market Street.

STATIONS

Smith Cove	Elevated on Elliott Avenue W
Interbay	Elevated on 15th Avenue W straddling W Dravus Street Bridge
Ballard	Elevated on 15th Avenue NW south of NW Market Street

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

- Shifted movable bridge west further away from existing bridge

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Movable bridge openings would interrupt LRT operations and recoverability could be challenging • Travel time estimate 5 to 6 minutes for route between Smith Cove and Ballard stations; a speed reduction was assumed for crossing movable bridge
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity • Approximately 17,200 forecasted population and employment served in 2040
Connect regional centers	• All stations within reasonable walking distance of Ballard-Interbay MIC; no regional growth centers in segment • Elevated terminal station on north-south alignment south of NW Market Street; a connected eastward extension per Sound Transit's RTLP feasible and includes surface disruptions, while an independent extension could cause less disruption
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • Movable bridge openings would impact and degrade systemwide operations • Engineering and constructability constraints with long span structures over existing interchanges, roadways, railroads and Salmon Bay • In-water construction activities would potentially impact vessel traffic in navigation channel, fish windows and tribal treaty fishing • Large diameter utility constraints and overhead power line conflicts
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Similar low-income populations as rest of the city and lower minority populations • Similar youth, elderly, LEP and disabled populations as rest of the city
Encourage equitable and sustainable urban growth	• Urban Design and Transportation Framework and multimodal transportation plan (*Move Ballard*) both anticipated light rail in Ballard • Adequate passenger transfer and transportation integration opportunities, but pedestrian access would be challenging • Limited equitable development opportunities near all three station locations
Promote a healthy built, natural, and social environment	• Permanent in-water impacts from piers in Salmon Bay • Permanent wildlife habitat impacts to SW Queen Anne Greenbelt for construction and slope stabilization • Most disruptive temporary construction impacts to neighborhoods • Traffic and circulation impacts on high volume streets, including Elliott Avenue W, 15th Avenue W and 15th Avenue NW • Freight and commerce effects, including truck movements, BNSF Railway and Fishermen's Terminal

15TH/FIXED BRIDGE/15TH

ALTERNATIVE | *SEGMENT* **INTERBAY/BALLARD**

ROUTE DESCRIPTION

This alternative would emerge from the downtown tunnel at Harrison Street on an elevated structure and run along the east side of Elliott Avenue W (out of the roadway). It would then transition to an at-grade guideway between the Queen Anne hillside and Elliott Avenue W and the cross over to the west side of 15th Avenue W. North of W Armory Way, the route would continue on an elevated structure on the west side of 15th Avenue W to W Barrett Street. From there, it would turn west over W Dravus Street and 16th Avenue W and then span Salmon Bay on a fixed bridge west of the existing Ballard Bridge. North of Salmon Bay, the elevated route would parallel 15th Avenue NW and end near 15th Avenue NW and NW Market Street.

STATIONS

Smith Cove	Elevated east of Elliott Avenue W
Interbay	Elevated at 16th Avenue W and W Bertona Street
Ballard	Elevated west of 15th Avenue NW south of NW Market Street

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

- Changed name of alternative; previously Elliott/15th/16th/Fixed Bridge
- Moved route alignment east, out of the roadway, on Elliott Avenue W from Mercer Street to N Armory Way (including Smith Cove Station) to reduce traffic impacts
- Moved route alignment to west side of 15th Avenue W, out of the roadway, from N Armory Way to vicinity of W Dravus Street to reduce traffic impacts
- Realigned Ballard Station west of 15th Avenue NW south of NW Market Street

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated with no movable bridge • Travel time estimate 5 to 6 minutes for route between Smith Cove and Ballard stations
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity • Approximately 16,700 forecasted population and employment served in 2040
Connect regional centers	• All stations within reasonable walking distance of Ballard-Interbay MIC; no regional growth centers in segment • Elevated terminal station on north-south alignment south of NW Market Street; a connected eastward extension per Sound Transit's RTLP feasible and includes surface disruptions, while an independent extension could cause less disruption
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • Engineering and constructability constraints with long span structures over existing interchanges, roadways, railroads and Salmon Bay • In-water construction activities would potentially impact vessel traffic in navigation channel, fish windows and tribal treaty fishing • Large diameter utility constraints and overhead power line conflicts • Higher cost approximately $200 million more than ST3 Representative Project
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Similar low-income populations as rest of the city, with lower minority populations • Similar youth, elderly, LEP and disabled populations as rest of the city
Encourage equitable and sustainable urban growth	• Urban Design and Transportation Framework and *Move Ballard* both anticipated light rail in Ballard; Interbay Station in area zoned industrial • Adequate passenger transfer and transportation integration opportunities • Equitable development opportunities near all three station locations, with more land potentially available for development
Promote a healthy built, natural, and social environment	• Permanent in-water impacts from piers in Salmon Bay; lesser than movable bridge in same location • Permanent wildlife habitat impacts to SW Queen Anne Greenbelt for construction and slope stabilization • Elevated guideway on west side of 15th Avenue NW reduces traffic impacts, but results in greater potential residential displacements compared to other alternatives • Business and commerce effects, including Fishermen's Terminal and small maritime and other businesses along elevated guideway

20TH/FIXED BRIDGE/17TH

ALTERNATIVE | *SEGMENT* **INTERBAY/BALLARD**

ROUTE DESCRIPTION

This alternative would emerge from the downtown tunnel on an elevated guideway at Roy Street and then span over Elliott Avenue W. It would continue north, crossing over to the west side of the BNSF Railway tracks and above Magnolia Bridge. Paralleling 20th and Gilman avenues W, the elevated route would eventually turn northeast and cross over the BNSF Railway tracks near 22nd Avenue W. South of Salmon Bay, the elevated route would transition to a fixed bridge near NW Dock Place. Once across Salmon Bay, the elevated route would end near 17th Avenue NW and NW Market Street.

STATIONS

Smith Cove	Elevated immediately northeast of BNSF Railway tracks
Interbay	Elevated on 20th Avenue W straddling W Dravus Street
Ballard	Elevated east of 17th Avenue NW straddling NW Market Street

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

- Changed name of alternative; previously West of BNSF/20th/17th/Fixed Bridge
- Shifted Interbay Station north to straddle W Dravus Street to improve access

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated with no movable bridge • Travel time estimate 5 to 6 minutes for route between Smith Cove and Ballard stations
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity • Approximately 19,000 forecasted population and employment served in 2040; greater than segment average due to Interbay Station capturing more population west of 20th Avenue W and Ballard Station on 17th Avenue NW also serving larger market to west
Connect regional centers	• All stations within reasonable walking distance of Ballard-Interbay MIC; no regional growth centers in segment • Elevated terminal station on north-south alignment straddling NW Market Street; a connected eastward extension per Sound Transit's RTLP more challenging due to greater surface disruptions in higher residential and business densities at 17th Avenue NW, while an independent extension could cause less disruption
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • Long span structures over BNSF Railway and Magnolia Bridge • Constrained column placement adjacent to existing infrastructure • Potential relocation of large diameter sewer, utilities and roadways • Long construction duration of fixed long span bridge over Salmon Bay; could include in-water construction activities that would potentially impact vessel traffic in navigation channel, fish windows and tribal treaty fishing • Higher cost approximately $500 million more than ST3 Representative Project
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Similar low-income populations as rest of the city, with lower minority populations • Similar youth, elderly, LEP and disabled populations as rest of the city
Encourage equitable and sustainable urban growth	• Urban Design and Transportation Framework and *Move Ballard* both anticipated light rail in Ballard • Adequate passenger transfer and transportation integration opportunities • Limited equitable development opportunities near all station locations
Promote a healthy built, natural, and social environment	• No permanent in-water impacts with fixed bridge spanning Salmon Bay • Potentially higher potential residential displacements compared to other alternatives, with terminal station and tail track near 17th Avenue NW and NW Market Street • Greater potential for temporary visual, noise, vibration and traffic impacts on residences during construction compared to other alternatives • Major transportation facilities affected, including existing streets and trails

20TH/TUNNEL/15TH

ALTERNATIVE — *SEGMENT* **INTERBAY/BALLARD**

ROUTE DESCRIPTION

This alternative would emerge from the downtown tunnel at Roy Street and then transition to an elevated structure. The elevated route would cross Elliott Avenue W and run west of the BNSF Railway tracks. It would then cross over Magnolia Bridge and continue adjacent to 20th Avenue W. North of W Dravus Street, the route would transition into a tunnel under Salmon Bay. The tunnel route would head east on the north shoreline of the bay and end near 15th Avenue NW and NW Market Street.

STATIONS

Smith Cove	Elevated immediately northeast of BNSF Railway tracks
Interbay	Retained cut (trench) on 20th Avenue W straddling of W Dravus Street
Ballard	Tunnel east of 17th Avenue NW south of NW Market Street

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

- Changed name of alternative; previously West of BNSF/20th/17th/Fixed Bridge
- Shifted Interbay Station north straddling W Dravus Street to improve access

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated with no movable bridge • Travel time estimate 5 to 6 minutes for route between Smith Cove and Ballard stations
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity • Approximately 17,800 forecasted population and employment served in 2040' greater than segment average due to Interbay Station capturing more population west of 20th Avenue W
Connect regional centers	• All stations within reasonable walking distance of Ballard-Interbay MIC; no regional growth centers in segment • Tunnel terminal station on north-south alignment south of NW Market Street; a connected eastward extension per Sound Transit's RTLP more feasible and direct with potentially less surface disruptions, and an independent extension also feasible
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • Long span structures over BNSF Railway and Magnolia Bridge • Constrained column placement adjacent to existing infrastructure • Tunnel under Salmon Bay avoids in-water construction associated with bridge activities that would potentially impact vessel traffic in navigation channel, fish windows and tribal treaty fishing • Engineering and constructability constraints with tunnel portal, cross passages and deep cut-and-cover Ballard Station • Highest cost approximately $700 million more than ST3 Representative Project • Tunnel costs not included in ST3 financial plan or evaluation methodology
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Similar low-income populations as rest of the city, with lower minority populations • Similar youth, elderly, LEP and disabled populations as rest of the city
Encourage equitable and sustainable urban growth	• Urban Design and Transportation Framework and *Move Ballard* both anticipated light rail in Ballard • Adequate passenger transfer and transportation integration opportunities • Limited equitable development opportunities near all station locations
Promote a healthy built, natural, and social environment	• Least visual effects with low profile or tunnel alignment in visually sensitive areas • Minimal traffic circulation and access effects, with limited permanent roadway or property access impacts • Lowest square footage of potential business displacements compared to other alternatives; tunnels could avoid impacts to maritime businesses • No permanent in-water impacts with tunnel under Salmon Bay

CENTRAL INTERBAY/MOVABLE BRIDGE/14TH

ALTERNATIVE — *SEGMENT* **INTERBAY/BALLARD**

ROUTE DESCRIPTION

This alternative would emerge from the downtown tunnel at Roy Street and then cross Elliott Avenue W via an elevated structure. The route would transition to existing grade, traveling under the W Galer and Magnolia bridges, eventually heading north to the east side of the BNSF Railway tracks. The route would again transition to an elevated structure passing above W Dravus Street. It would continue north, cross over the 15th Avenue W and W Emerson Street intersection and align with 14th Avenue NW to span Salmon Bay via a movable bridge. North of Salmon Bay, the elevated route would continue along 14th Avenue NW, ending south of NW Market Street.

STATIONS

Smith Cove	At-grade immediately northeast of BNSF Railway tracks south of Magnolia Bridge
Interbay	Elevated on Thorndyke Avenue W north of W Dravus Street
Ballard	Elevated on 14th Avenue straddling NW Market Street

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

- Changed name of alternative; previously East of BNSF/14th/Movable Bridge
- Shifted Smith Cove Station south, just north of W Galer Street overpass to improve access and provide more distance between pump station south of Magnolia Bridge
- Shifted Ballard Station north straddling NW Market Street to improve access

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Movable bridge openings would interrupt LRT operations and recoverability could be challenging • Travel time estimate 5 to 6 minutes for route between Smith Cove and Ballard stations; a speed reduction was assumed for crossing movable bridge
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity • Approximately 15,400 forecasted population and employment served in 2040; lower than segment average due to Ballard Station on 14th Avenue NW further from center of Ballard hub urban village
Connect regional centers	• All stations within reasonable walking distance of Ballard-Interbay MIC; no regional growth centers in segment • Elevated terminal station on north-south alignment straddling NW Market Street; a connected eastward extension per Sound Transit's RTLP feasible and includes surface disruptions, while an independent extension could cause less disruption
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • Movable bridge openings would impact and degrade systemwide operations • Long section of at-grade guideway potentially less challenging • Engineering and constructability constraints with long span structures over existing interchanges, roadways, railroads and Salmon Bay • In-water construction activities would potentially impact vessel traffic in navigation channel, fish windows, tribal treaty fishing and maintain access to 14th Avenue NW boat ramp • Higher cost approximately $200 million more than ST3 Representative Project
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Similar low-income populations as rest of the city, with lower minority populations • Similar youth, elderly, LEP and disabled populations as rest of the city
Encourage equitable and sustainable urban growth	• Least amount of station walksheds within urban centers and villages • Ballard Station in area on 14th Avenue NW planned for commercial uses; Interbay Station in area zoned industrial • Adequate passenger transfer and transportation integration opportunities, but pedestrian and bicycle access would be limited • Equitable development opportunities near Smith Cove and Interbay stations
Promote a healthy built, natural, and social environment	• Potential permanent impacts on four parks, including 14th Avenue NW Boat Ramp, Interbay Athletic Field, Interbay Golf Course and Kinnear Park • Permanent in-water impacts from piers in Salmon Bay • Potential disturbance of old Interbay landfill, as well as 16 contaminated sites of higher concern

ARMORY WAY/TUNNEL/14TH

ALTERNATIVE | *SEGMENT* **INTERBAY/BALLARD**

ROUTE DESCRIPTION

This alternative would emerge from the downtown tunnel at Mercer Street, paralleling Elliott Avenue W at grade. The route would transition to an elevated structure along the Queen Anne hillside to 15th Avenue W and W Armory Way, crossing over the intersection. It would then run on the east side of the BNSF Railway tracks, pass under W Dravus Street and then curve east between the railroad tracks and 15th Avenue W. The route would then descend into a tunnel beneath Salmon Bay and continue to a terminus near 14th Avenue NW and NW Market Street.

STATIONS

Smith Cove	At-grade east of Elliott Avenue W
Interbay	Retained cut (trench) on Thorndyke Avenue W north of W Dravus Street
Ballard	Tunnel under 14th Avenue NW straddling NW Market Street

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

- Changed name of alternative; previously East of BNSF/14th/Tunnel
- Shifted Ballard Station north straddling NW Market Street to improve access

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated with no movable bridge • Travel time estimate 5 to 6 minutes for route between Smith Cove and Ballard stations
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity • Approximately 16,400 forecasted population and employment served in 2040
Connect regional centers	• All stations within reasonable walking distance of Ballard-Interbay MIC; no regional growth centers in segment • Tunnel terminal station on north-south alignment at NW Market Street; a connected eastward extension per Sound Transit's RTLP more feasible and direct with potentially less surface disruptions, and an independent extension also feasible
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • Tunnel under Salmon Bay avoids in-water construction associated with bridge activities that would potentially impact vessel traffic in navigation channel, fish windows and tribal treaty fishing • Engineering and constructability constraints with tunnel portal, cross passages and deep cut-and-cover Ballard Station • Higher cost approximately $300 million more than ST3 Representative Project • Tunnel costs not included in ST3 financial plan or evaluation methodology
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Similar low-income populations as rest of the city and lower minority populations • Similar youth, elderly, LEP and disabled populations as rest of the city
Encourage equitable and sustainable urban growth	• Least amount of station walksheds within urban centers and villages • Ballard Station in area on 14th Avenue NW planned for commercial uses; Interbay Station in area zoned industrial • Adequate passenger transfer and transportation integration opportunities • Equitable development opportunities near Smith Cove and Interbay stations
Promote a healthy built, natural, and social environment	• Potential permanent impacts on three parks, including Interbay Athletic Field, Interbay Golf Course and Kinnear Park • Permanent wildlife habitat impacts to SW Queen Anne Greenbelt for construction and slope stabilization • Least disruptive temporary construction impacts to neighborhoods compared to other alternatives • Lowest square footage of potential business displacements compared to other alternatives; tunnels could avoid impacts to maritime businesses • No permanent in-water impacts with tunnel under Salmon Bay

CENTRAL INTERBAY/FIXED BRIDGE/14TH

ALTERNATIVE | *SEGMENT* **INTERBAY/BALLARD**

ROUTE DESCRIPTION

This alternative would emerge from the downtown tunnel at Roy Street and then cross Elliott Avenue W via an elevated structure. The route would transition to existing grade, traveling under the W Galer and Magnolia bridges, eventually heading north to the east side of the BNSF Railway tracks. The route would again transition to an elevated structure passing above W Dravus Street. It would continue north, cross over the 15th Avenue W and W Emerson Street intersection and align with 14th Avenue NW to span Salmon Bay via a fixed bridge. North of Salmon Bay, the elevated route would continue along 14th Avenue NW, ending north of NW Market Street.

STATIONS

Smith Cove	At-grade immediately northeast of BNSF Railway tracks south of Magnolia Bridge
Interbay	Elevated on Thorndyke Avenue W north of W Dravus Street
Ballard	Elevated under 14th Avenue NW straddling NW Market Street

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

- New alternative in Level 2

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated with no movable bridge • Travel time estimate 5 to 6 minutes for route between Smith Cove and Ballard stations
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity • Approximately 15,400 forecasted population and employment served in 2040; lower than segment average due to Ballard Station location on 14th Avenue NW further from center of Ballard hub urban village
Connect regional centers	• All stations within reasonable walking distance of Ballard-Interbay MIC; no regional growth centers in segment • Elevated terminal station on north-south alignment straddling NW Market Street; a connected eastward extension per Sound Transit's RTLP feasible and includes surface disruptions, while an independent extension could cause less disruption
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • Long section of at-grade guideway potentially less challenging • Engineering and constructability constraints with long span structures over existing interchanges, roadways, railroads and Salmon Bay • In-water construction activities would potentially impact vessel traffic in navigation channel, fish windows, tribal treaty fishing and maintain access to 14th Avenue NW boat ramp • Higher cost approximately $100 million more than ST3 Representative Project
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Similar low-income populations as rest of the city and lower minority populations • Similar youth, elderly, LEP and disabled populations as rest of the city
Encourage equitable and sustainable urban growth	• Least amount of station walksheds within urban centers and villages • Ballard Station in area on 14th Avenue NW planned for commercial uses; Interbay Station in area zoned industrial • Adequate passenger transfer and transportation integration opportunities, but pedestrian and bicycle access would be limited • Equitable development opportunities near Smith Cove and Interbay stations
Promote a healthy built, natural, and social environment	• Potential permanent impacts on four parks, including 14th Avenue NW Boat Ramp, Interbay Athletic Field, Interbay Golf Course and Kinnear Park • Permanent in-water impacts from piers in Salmon Bay; lesser than movable bridge in same location • Potential disturbance of old Interbay landfill, as well as 16 contaminated sites of higher concern

CENTRAL INTERBAY/TUNNEL/15TH

ALTERNATIVE — *SEGMENT* **INTERBAY/BALLARD**

ROUTE DESCRIPTION

This alternative would emerge from the downtown tunnel at Roy Street and then cross Elliott Avenue W via an elevated structure. The route would transition to existing grade, traveling under the W Galer and Magnolia bridges, eventually heading north to the east side of the BNSF Railway tracks. The route would then descend into a tunnel beneath Salmon Bay on the west side of the existing Ballard Bridge. It would continue in a tunnel to a terminus just east of 15th Avenue NW and NW Market Street.

STATIONS

Smith Cove	At grade immediately northeast of BNSF Railway tracks south of Magnolia Bridge
Interbay	Retained cut (trench) on Thorndyke Avenue W north of W Dravus Street
Ballard	Tunnel east of 15th Avenue NW straddling NW Market Street

REFINEMENTS TO ALTERNATIVE FROM LEVEL 1

- New alternative in Level 2

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated with no movable bridge • Travel time estimate 5 to 6 minutes for route between Smith Cove and Ballard stations
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity • Approximately 16,500 forecasted population and employment served in 2040
Connect regional centers	• All stations within reasonable walking distance of Ballard-Interbay MIC; no regional growth centers in segment • Tunnel terminal station on north-south alignment straddling NW Market Street; a connected eastward extension per Sound Transit's RTLP feasible and direct with potentially less surface disruptions, and an independent extension also feasible
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • Long section of at-grade guideway potentially less challenging • Tunnel under Salmon Bay avoids in-water construction associated with bridge activities that would potentially impact vessel traffic in navigation channel, fish windows and tribal treaty fishing • Engineering and constructability constraints with tunnel portal, cross passages and deep cut-and-cover Ballard Station • Major utility constraints would require deeper tunnel and Ballard Station • Higher cost approximately $500 million more than ST3 Representative Project • Tunnel costs not included in ST3 financial plan or evaluation methodology
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Better access to opportunities provided for historically underserved populations on the greater Link system • Similar low-income populations as rest of the city and lower minority populations • Similar youth, elderly, LEP and disabled populations as rest of the city
Encourage equitable and sustainable urban growth	• Urban Design and Transportation Framework and *Move Ballard* both anticipated light rail in Ballard; Interbay Station in area zoned industrial • Adequate passenger transfer and transportation integration opportunities • Equitable development opportunities near all three station locations, with more land potentially available for development
Promote a healthy built, natural, and social environment	• Potential permanent impacts on three parks, including Interbay Athletic Field, Interbay Golf Course and Kinnear Park • Greatest square footage of potential business displacements compared to other alternatives, but tunnel could avoid impacts to maritime businesses • Minimal traffic circulation and access effects, with limited or no permanent roadway or property access impacts • No permanent in-water impacts with tunnel under Salmon Bay

4.4.1 Interbay/Ballard Segment Summary Findings

While construction complexity is a unifying theme across each segment, the key themes that emerged from the Level 2 Screening in the Interbay/Ballard Segment also included property acquisition, mobility, and economic effects. Environmental effects, particularly around land uses associated with commercial fishing, the Interbay industrial lands, and tribal treaty fishing, are also themes for certain alternatives based on their locations and water crossing types. As the evaluation of alternatives advances to the Level 3 Screening, additional design work and investigation into these and other themes or specific issues will provide greater detail on the feasibility of each alternative.

General discussion and feedback from the public, SAG and ELG included the following common themes for the Level 2 alternatives evaluation and screening:

- Concern with ST3 Representative Project, movable bridge and anything on 15th Avenue W
- Consider pedestrian bridge if Smith Cove Station located east of 15th Avenue W
- Concern with effects on Fishermen's Terminal

Table 4-8 (Interbay/Ballard Segment ELG Screening Recommendations) identifies the alternatives carried forward for additional design refinement and screened as part of the Level 3 Screening. Additional evaluation information and results for the Interbay/Ballard alternatives may be found in **Appendix E** (Interbay/Ballard Segment Level 2 Evaluation Matrices).

Table 4-8 Interbay/Ballard Segment ELG Screening Recommendations

Level 2 Alternative	Key Findings	Public Feedback and Common Themes	Carry Forward into Level 3	Suggested Refinements for Level 3
ST3 Representative Project	• Carries forward into Level 3 as ST3 Representative Project	• Concern about poor transit reliability with a movable bridge • Concern with route on 15th Avenue W due to traffic and business effects	Yes	--
15th/Fixed Bridge/15th	• Maritime business effects at Fishermen's Terminal • Elevated guideway along west side of 15th Avenue W affects more residences • Costs approximately $200 million more than ST3 Representative Project	• Concern about Fishermen's Terminal effects	No	--
20th/Fixed Bridge/17th	• Long span bridge over the BNSF tracks adds complexity • Ballard terminus/crossing location at 17th Avenue NW affects more residences • Costs approximately $500 million more than ST3 Representative Project	• Concern about overall cost • Concern about Ballard Station property, construction and visual effects, but support for location	No	--
20th/Tunnel/15th	• Long span bridge over the BNSF tracks, constrained tunnel portal location, and deeper tunnel station at 15th Avenue NW add complexity • Avoids in-water construction associated with bridge activities that would potentially impact vessel traffic in navigation channel, fish windows and tribal treaty fishing • Tunnel station along west side of 15th Avenue W affects residences • Costs approximately $700 million more than ST3 Representative Project; tunnel costs not included in ST3 financial plan or evaluation methodology and requires funding partnerships	• Concern about tunnel cost versus Armory Way/ Tunnel/14th Alternative	No	--
Central Interbay/Movable Bridge/14th	• Potential service interruptions due to movable bridge • Maritime business and potential vessel navigation effects • Affects fewer parcels in Ballard because of wider available right-of-way along 14th Avenue NW • Costs approximately $200 million more than ST3 Representative Project	• Concern about poor transit reliability with a movable bridge	No	--
Armory Way/Tunnel/14th	• Fewer environmental and maritime business/navigation effects; avoids in-water construction associated with bridge activities that would potentially impact vessel traffic in navigation channel, fish windows and tribal treaty fishing • Affects fewer parcels in Ballard because of wider available right-of-way along 14th Avenue NW • Approximately $300 million more than ST3 Representative Project; tunnel costs not included in ST3 financial plan or evaluation methodology and requires funding partnerships	• General support for more cost-effective tunnel crossing • Support for Ballard Station with fewer property effects • Explore Ballard Station access at 15th Avenue NW, closer to center of urban village	Yes	• Ballard Station access at 15th Avenue NW, closer to center of urban village
Central Interbay/Fixed Bridge/14th	• Maritime business effects, but less than with movable bridge • Affects fewer parcels in Ballard because of wider available right-of-way along 14th Avenue NW • Costs approximately $100 million more than ST3 Representative Project	• Some support for fixed bridge and Ballard Station, with fewer property effects	Yes	--
Central Interbay/Tunnel/15th	• Fewer environmental and maritime business/navigation effects; avoids in-water construction associated with bridge activities that would potentially impact vessel traffic in navigation channel, fish windows and tribal treaty fishing • Tunnel station along the east side of 15th Avenue W affects businesses • Costs approximately $500 million more than ST3 Representative Project; tunnel costs not included in ST3 financial plan or evaluation methodology and requires funding partnerships	• Concern about tunnel cost versus Armory Way/ Tunnel/14th Alternative • Concern about Ballard Station business effects, but support for 15th Avenue NW station location	No	--

5 SUMMARY OF LEVEL 2 SCREENING RECOMMENDATIONS

In summary, the Level 2 alternatives addressed different challenges and opportunities, and the evaluation highlighted potential benefits or impacts associated with each alternative. The Level 2 Screening also identified key themes and issues to consider moving forward into Level 3. For the Level 3 Screening, additional design efforts will refine those alternatives that remain to develop end-to-end alternatives from West Seattle to Ballard.

This technical memorandum presents the Level 2 Screening recommendations that the ELG made on October 5, 2018. The ELG's recommendations include the Level 2 alternatives carried forward into Level 3 for further refinement and evaluation, as well as the Level 2 alternatives not carried forward into Level 3.

5.1 Alternatives Carried Forward into Level 3

Table 5-1 (Summary of Level 2 Alternatives Carried Forward into Level 3) lists the ELG's recommended Level 2 alternatives carried forward into the Level 3 Screening process. The ELG recommended 14 of the 24 alternatives advance into Level 3. In all cases, the ST3 Representative Project is carried forward into Level 3 to continue to serve as the baseline alternative from the *ST3 Plan*. The remaining alternatives in each of the study segments will be refined to address the comments discussed with the SAG, ELG and other stakeholders, as listed in **Table 5-1**.

5.2 Alternatives Not Carried Forward into Level 3

Table 5-2 (Summary of Level 2 Alternatives Not Carried Forward into Level 3) shows the 10 Level 2 alternatives and other suggestions that the ELG recommended not be carried forward into Level 3. Many of these alternatives did not adequately serve the community in comparison to the other alternatives and/or were anticipated to have greater potential impacts to the community and environment. In addition, some alternatives were not carried forward into Level 3 because of major engineering constraints and constructability issues.

Table 5-1 Summary of Level 2 Alternatives Carried Forward into Level 3

Segment / Level 2 Alternative	Key Findings	Public Feedback and Common Themes	Suggested Refinements for Level 3
West Seattle/Duwamish Segment			
ST3 Representative Project	• Carries forward into Level 3 as ST3 Representative Project	• Explore moving Delridge Station further south • Explore Alaska Junction Station east and oriented north-south	• Shift Delridge Station further south • Shift Alaska Junction Station east and oriented north-south
Golf Course/Alaska Junction/ Tunnel	• Fewer residential and business effects at Alaska Junction • Low guideway along SW Genesee Street • Costs approximately $700 million more than ST3 Representative Project; tunnel costs not included in ST3 financial plan or evaluation methodology and requires funding partnerships • Increases schedule risk compared to ST3 Representative Project	• General support for this alternative, with development opportunities at Delridge Station location to serve neighborhood • Support for lower guideway along SW Genesee Street • Explore Alaska Junction Station location at 41st and 42nd avenues NW • Explore north crossing of Duwamish Waterway	• Shift Alaska Junction Station locations to 41st and 42nd avenues NW • North crossing of Duwamish Waterway
SODO and Chinatown/International District Segment			
ST3 Representative Project	• Carries forward into Level 3 as ST3 Representative Project	• Concern about cut-and-cover tunnel construction effects	--
Massachusetts Tunnel Portal	• Shallow cut-and-cover station under 5th Avenue with easy rider access/transfers • Construction effects and parking lane closures on 5th Avenue in station area • Costs approximately $200 million less than ST3 Representative Project • New at-grade SODO Station on E3 busway at Lander • Transfer at existing SODO Station • Bus operations on E3 busway displaced • New grade separated roadway crossings (Lander, Holgate) improve existing rail/traffic/freight operations • Property effects at tunnel portal site • Avoids impacts to Ryerson Base	• General support for surface alignment • Support for new roadway overpasses at Lander and Holgate • Explore shifting existing and new SODO stations closer to Lander • Support for reduced construction effects and shallower station	• Shift existing and new SODO stations closer to Lander
Surface E3	• Shallow cut-and-cover station under 5th Avenue and easy rider access/transfers • Construction effects and parking lane closures on 5th Avenue in station area • Costs approximately $400 million less than ST3 Representative Project • New at-grade SODO Station on E3 busway at Lander • Transfer at existing SODO Station • Bus operations on E3 busway displaced • New grade separated roadway crossings (Lander, Holgate) improve existing rail/traffic/freight operations • Avoids impacts to Ryerson Base	• General support for surface alignment • Support for new roadway overpasses at Lander and Holgate • Some support for second Stadium Station • Explore shifting existing and new SODO stations closer to Lander • Concern about cut-and-cover tunnel construction effects	• Shift existing and new SODO stations closer to Lander
4th Avenue Cut-and-Cover Tunnel/Station	• Shallow cut-and-cover station under 4th Avenue with easy rider access/transfers • Major engineering/constructability constraints (4th Avenue viaduct demolition/rebuild, active BNSF railway, existing transit tunnel, etc.) • Large property effects (King County Administration Building) • Costs approximately $600 million more than ST3 Representative Project; requires funding partnerships for 4th Avenue Viaduct re-build costs • Increased schedule risk compared to ST3 Representative Project	• Support for closer proximity to King Street Station, reduced Chinatown/ International District effects along 5th Avenue and shallower station • Concern about traffic detours	--
4th Avenue Bored Tunnel/ Mined Station	• Deep mined station (approximately 200 feet) under 4th Avenue with poor rider access/transfers • Major engineering/constructability constraints (4th Avenue viaduct demolition/rebuild, active BNSF railway, existing transit tunnel, etc.) • Large property effects (Ryerson Base for tunnel portal site) • Results in very deep Midtown Station (approximately 250 feet) • Costs approximately $500 million more than ST3 Representative Project; requires funding partnerships for 4th Avenue Viaduct re-build costs • Increased schedule risk compared to ST3 Representative Project	• Support for closer proximity to King Street Station and reduced Chinatown/ International District effects along 5th Avenue • Concern about traffic detours and access due to deep station	--

Table 5-1 Summary of Level 2 Alternatives Carried Forward into Level 3

Segment / Level 2 Alternative	Key Findings	Public Feedback and Common Themes	Suggested Refinements for Level 3
5th Avenue Bored Tunnel/ Mined Station	• Deep mined station (approximately 200 feet) under 5th Avenue with poor rider access/transfers • Less construction effects, parking closures on 5th Avenue with mined station • Some property effects (for mined station access shaft) • Results in very deep Midtown Station (approximately 250 feet) • Cost similar to ST3 Representative Project • Somewhat higher schedule risk compared to ST3 Representative Project	• Support for reduced construction effects • Concern about access due to deep station	--
Downtown Segment			
ST3 Representative Project	• Carries forward into Level 3 as ST3 Representative Project	--	--
5th Avenue/Harrison	• Better bus/rail integration opportunity at South Lake Union Station on Harrison Street • Higher property effects due to tunnel portal location on Harrison Street west of Seattle Center • Engineering challenges with tunneling under Key Arena • Approximately $200 million more than ST3 Representative Project	• Support for this alternative with Seattle Center Station located at Republican Street	• Seattle Center Station located at Republican Street
5th/Terry/Roy/Mercer	• Avoids SR 99 portal and large sewer pipes in the vicinity of SR 99 • Seattle Center Station location on Mercer Street is one block from Key Arena • Approximately $200 million more than ST3 Representative Project	• Some support for Denny Station at Terry • Interest in 6th Avenue route through Downtown	• 6th Avenue route through Downtown
Interbay/Ballard Segment			
ST3 Representative Project	• Carries forward into Level 3 as ST3 Representative Project	• Concern about poor transit reliability with a movable bridge • Concern with route on 15th Avenue W due to traffic and business effects	--
Armory Way/Tunnel/14th	• Fewer environmental and maritime business/navigation effects; no permanent in-water impacts with tunnel under Salmon Bay • Affects fewer parcels in Ballard because of wider available right-of-way along 14th Avenue NW • Approximately $300 million more than ST3 Representative Project; tunnel costs not included in ST3 financial plan or evaluation methodology and requires funding partnerships	• General support for more cost-effective tunnel crossing • Support for Ballard Station with fewer property effects • Explore Ballard Station access at 15th Avenue NW, closer to center of urban village	• Ballard Station access at 15th Avenue NW, closer to center of urban village
Central Interbay/Fixed Bridge/14th	• Maritime business effects, but less than with movable bridge • Affects fewer parcels in Ballard because of wider available right-of-way along 14th Avenue NW • Costs approximately $100 million more than ST3 Representative Project	• Some support for fixed bridge and Ballard Station, with fewer property effects	--

Table 5-2 Summary of Level 2 Alternatives Not Carried Forward into Level 3

Segment / Level 2 Alternative	Key Findings	SAG and ELG Screening Reasoning
West Seattle/Duwamish Segment		
Pigeon Ridge/West Seattle Tunnel	• Most engineering constraints and effects on Duwamish Greenbelt • Low guideway along SW Genesee Street • Fewer residential and business effects in Delridge • Costs approximately $1,200 million more than ST3 Representative Project; tunnel costs not included in ST3 financial plan or evaluation methodology and requires funding partnerships • Increases schedule risk compared to ST3 Representative Project	• SAG recommended this alternative be carried forward because of fewer residential and business impacts in Delridge area and lower guideway on SW Genesee Street • ELG recommended this alternative not be carried forward due to high cost and engineering constraints
Oregon Street/Alaska Junction/Elevated	• Increases residential and business effects at Alaska Junction • Complicates a future extension to the south • High guideway along SW Genesee Street • Cost would be similar to ST3 Representative Project	• Property effects of an elevated guideway along California Avenue SW
Oregon Street/Alaska Junction/Tunnel	• High guideway along SW Genesee Street • Fewer engineering constraints • Affects freight and port terminal facilities during construction • Costs approximately $500 million more than ST3 Representative Project; tunnel costs not included in ST3 financial plan or evaluation methodology and requires funding partnerships • Increases schedule risk compared to ST3 Representative Project	• Concern about Alaska Junction Station location at 44th Avenue SW and higher guideway along SW Genesee Street
SODO and Chinatown/International District Segment		
Occidental Avenue	• New elevated SODO Station on Occidental Avenue at Lander Street and transfer at existing Stadium Station • Long span bridges over BNSF tracks and longer track connection to maintenance facility • Bus operations on E3 busway partially displaced • Property effects along Occidental, BNSF crossings and maintenance facility connection • Costs approximately $200 million more than ST3 Representative Project	• SAG recommended this alternative be carried forward due to support for locating a station further west in SODO area • ELG recommended this alternative not be carried forward due to concerns about property effects and freight mobility that would result from a long, elevated structure over the BNSF railroad
Downtown Segment		
6th Avenue/Boren/Roy	• Avoids building tie-backs on 5th Avenue, SR 99 portal and large sewer pipes in the vicinity of SR 99 • More constrained Denny Station location on Boren Avenue • Seattle Center Station location on Roy Street is two blocks from Key Arena • Lower bus/rail integration opportunity at Seattle Center Station on Roy Street • Comparable cost to ST3 Representative Project	• Steep grade on Denny Way at Boren Avenue and limited support for South Lake Union Station at Roy Street due to access restrictions to east
Interbay/Ballard Segment		
15th/Fixed Bridge/15th	• Maritime business effects at Fishermen's Terminal • Elevated guideway along west side of 15th Avenue W affects more residences • Costs approximately $200 million more than ST3 Representative Project	• Concern about effects on Fishermen's Terminal
20th/Fixed Bridge/17th	• Long span bridge over the BNSF tracks adds complexity • Ballard terminus/crossing location at 17th Avenue NW affects more residences • Costs approximately $500 million more than ST3 Representative Project	• Overall cost and property, construction, and visual effects of the 17th Avenue NW Ballard Station location
20th/Tunnel/15th	• Long span bridge over the BNSF tracks, constrained tunnel portal location, and deeper tunnel station at 15th Avenue NW add complexity; no permanent in-water impacts with tunnel under Salmon Bay • Tunnel station along west side of 15th Avenue W affects residences • Costs approximately $700 million more than ST3 Representative Project; tunnel costs not included in ST3 financial plan or evaluation methodology and requires funding partnerships	• Concern about the high cost relative to other tunnel options and construction complexity associated with major structures
Central Interbay/Movable Bridge/14th	• Potential service interruptions due to movable bridge • Maritime business and potential vessel navigation effects • Affects fewer parcels in Ballard because of wider available right-of-way along 14th Avenue NW • Costs approximately $200 million more than ST3 Representative Project	• Concern about poor transit reliability with a movable bridge

Table 5-2 Summary of Level 2 Alternatives Not Carried Forward into Level 3

Segment / Level 2 Alternative	Key Findings	SAG and ELG Screening Reasoning
Central Interbay/Tunnel/15th	• Fewer environmental and maritime business/navigation effects; no permanent in-water impacts with tunnel under Salmon Bay • Tunnel station along the east side of 15th Avenue W affects businesses • Costs approximately $500 million more than ST3 Representative Project; tunnel costs not included in ST3 financial plan or evaluation methodology and requires funding partnerships	• SAG recommended this alternative be carried forward because of desire to locate the Ballard Station at 15th Avenue NW • ELG recommended this alternative not be carried forward due to concerns about the high cost relative to other tunnel options and business effects associated with Ballard Station

6 NEXT STEPS

The Level 3 Screening is the next step of the Alternatives Development process for the WSBLE Project, as shown on **Figure 6-1** (Next Steps in Alternatives Development Phase). A more refined definition of alternatives and evaluation process will be used, with additional engineering, travel forecasting and other information. At this stage, the segment-level alternatives will be pieced together from end-to-end, providing corridorwide alternatives from West Seattle to Ballard. Eventually, a Preferred Alternative will be identified by the Sound Transit Board for advancement into the environmental review phase, along with other alternatives to evaluate in an EIS.

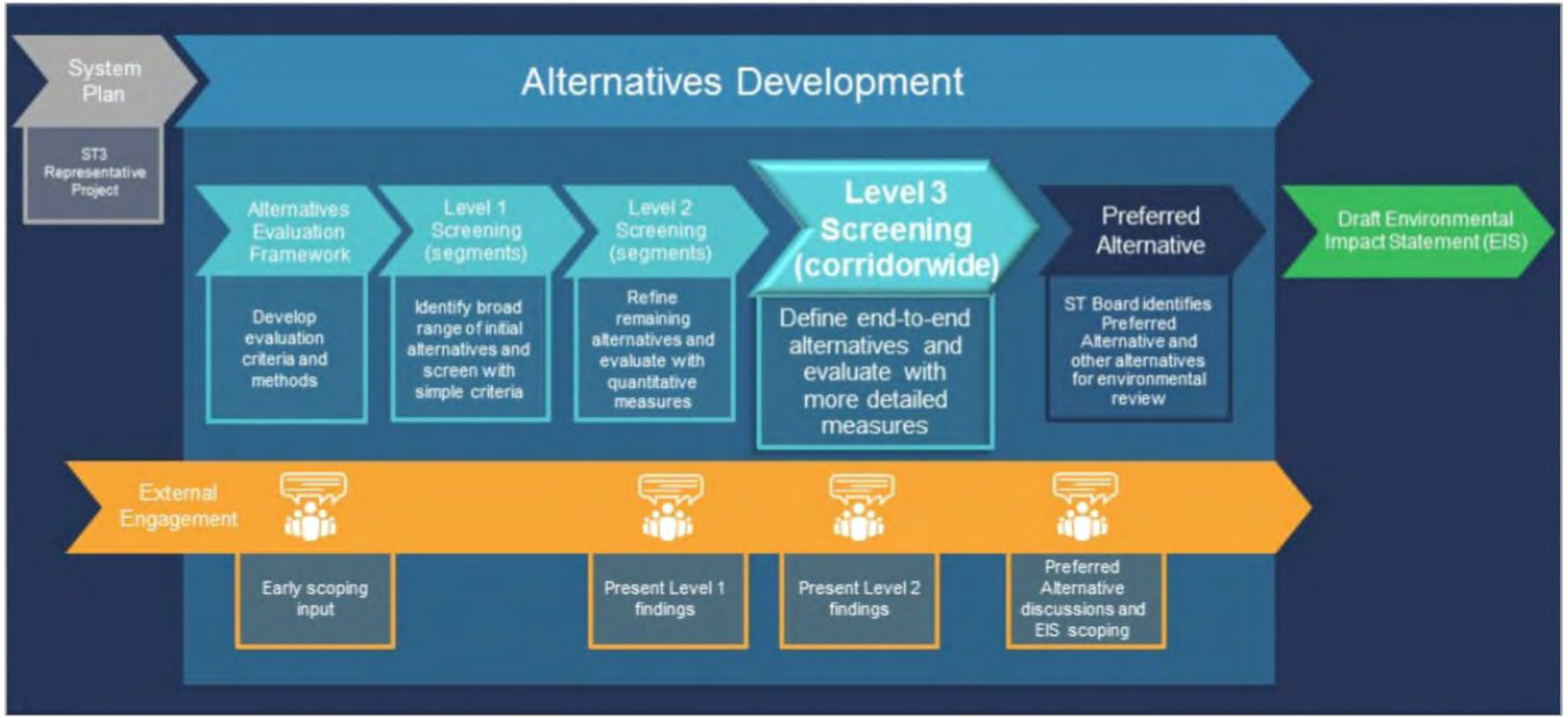


Figure 6-1 Next Steps in Alternatives Development Phase

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APPENDIX A

Level 2 Screening Evaluation
Criteria, Measures, Methods and Thresholds

Level 2 Screening Evaluation Criteria, Measures, Methods and Thresholds

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.			
Reliable Service	Potential service interruptions and recoverability	Likelihood of service interruptions during peak and off-peak travel periods (e.g., frequency and duration of movable bridge openings, at-grade crossings, etc.) and redundancy and ability to reroute service	High = Low likelihood of service interruptions and good redundancy Medium = Limited likelihood of service interruptions and adequate redundancy Low = High likelihood of service interruptions and/or limited redundancy
Travel Times	LRT travel times	Estimated travel times within segments based on alignment characteristics (minutes)	High = Travel time approximately 15% faster than the average for all alternatives Medium = Travel time is close to the average for all alternatives Low = Travel time approximately 15% slower than the average for all alternatives
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.			
Regional Connectivity	LRT network integration	Ability to accommodate spine segmentation for regional light rail transit (LRT) system connectivity and operational flexibility to meet future demand	High = Facilitates additional connectivity and operational flexibility beyond spine segmentation Medium = Facilitates spine segmentation for operational flexibility consistent with ST3 Plan Low = Does not facilitate spine segmentation
Transit Capacity	Passenger carrying capacity in downtown	Combined passenger carrying capacity of downtown transit tunnels	High = Includes new light rail tunnel through downtown with additional improvements Medium = Includes new light rail tunnel through downtown consistent with ST3 Plan Low = Does not include new light rail tunnel through downtown consistent with ST3 Plan
Projected Transit Demand	Ridership potential	Future Puget Sound Regional Council (PSRC) forecasted 2040 total population and employment within 10-minute walkshed of WSBLE Project stations	High = At least 5% greater than average of population and employment within study segment Medium = Within 5% of average of population and employment within study segment Low = At least 5% less than average of population and employment within study segment
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.			
Regional Centers Served	Station proximity to PSRC-designated regional growth centers	Number of PSRC-designated regional growth centers served by stations	High = Station(s) located in regional growth center(s) in study segment Medium = Station(s) located within reasonable walking distance of regional growth center(s) in study segment Low = Regional growth center(s) in study segment not served
	Station proximity to PSRC-designated manufacturing/industrial centers	Number of PSRC-designated manufacturing/industrial centers served by stations	High = Station(s) located in manufacturing/industrial center(s) in study segment Medium = Station(s) located within reasonable walking distance of manufacturing/industrial center(s) in study segment Low = Manufacturing/industrial center(s) in study segment not served
Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Ability to accommodate expansion potential of future LRT extensions identified in Sound Transit Regional Transit Long-Range Plan	High = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct Medium = A future LRT extension per Sound Transit Long-Range Plan feasible Low = A future LRT extension per Sound Transit Long-Range Plan would be less feasible and less direct
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.			
ST3 Consistency	Mode, route and general station locations per ST3	Consistency of mode, route and general station locations per ST3	High = Mode, route and general station locations consistent with ST3 Plan Medium = Mode, route and general station locations moderately consistent with ST3 Plan Low = Mode, route and general station locations not consistent with ST3 Plan
	Potential ST3 implementation schedule effects	Constructability, environmental or other issues/challenges that may cause WSBLE Project schedule risks (e.g., right-of-way [ROW] acquisition needs, in-water work restrictions, regulatory compliance process, etc.)	High = Similar implementation schedule for WSBLE Project as included in ST3 Plan Medium = Moderate potential effects to implementation schedule for WSBLE Project as included in ST3 Plan Low = Major potential effects to implementation schedule for WSBLE Project as included in ST3 Plan
	Potential ST3 operating plan effects	Integration of WSBLE Project into existing LRT spine and overall system (i.e., special trackwork, movable bridge implications, etc.)	High = Facilitates special trackwork and/or provides reliable system operations Medium = Facilitates some special trackwork and/or provides moderately reliable system operations Low = Does not facilitate special trackwork and/or degrades system operations
Technical Feasibility	Engineering constraints	Compliance with Sound Transit Design Criteria Manual, design criteria from agencies with jurisdiction and federal regulations, and engineering obstacles associated with major infrastructure constraints	High = Minimal engineering constraints, design meets full standards, likely acceptance by authority having jurisdiction, minimum ROW issues, and/or no unusual design considerations Medium = Moderate engineering constraints, design meets minimums, likely acceptance by authority having jurisdiction, but with additional mitigation and moderate ROW issues, and/or unusual design considerations that could be easily mitigated Low = Substantial engineering constraints, deviations to standards, authority having jurisdiction's acceptance requires substantial mitigation, substantial ROW issues, and/or unique design considerations

The Level 2 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 2 Screening Evaluation Criteria, Measures, Methods and Thresholds

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Technical Feasibility (continued)	Constructability issues	Constructability issues based on potential conflicts and technical challenges (e.g., utility conflicts, existing infrastructure, geotechnical, tunnel portals, etc.)	High = Lower construction complexity and lower construction risks (e.g., minimal utility conflicts, building impacts, impacts to existing infrastructure, etc.) Medium = Moderate construction complexity and moderate construction risks Low = Higher construction complexity requiring special mitigation and higher construction risks
	Operational constraints	Assessment of operational constraints (e.g., access to maintenance facility, vertical grade, horizonal curvature, movable bridge, etc.)	High = Optimum operational characteristics (e.g., operating efficiency and flexibility) Medium = Meets minimum operational goals for design speed and operations and maintenance facility (OMF) connection Low = Poor operational characteristics, with certain operational goals compromised for design speed and OMF connection
Financial Sustainability	Conceptual capital cost comparison	ST3 cost consistency and conceptual capital cost (includes alignment and stations, but not for items such as rolling stock) comparison based on conceptual design quantities and current Sound Transit unit pricing (2017$)	High = Conceptual capital cost less than 10% (or more) of ST3 Representative Project Medium = Conceptual capital cost between 10% less and 10% more of ST3 Representative Project Low = Conceptual capital cost greater than 10% (or more) of ST3 Representative Project
	Operating cost impacts	Assessment of operations and maintenance (O&M) cost impacts, including annual and lifecycle costs	High = System operational requirements would have lower O&M cost implications Medium = System operational requirements would have moderate O&M cost implications Low = System operational requirements would have higher O&M cost implications
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.			
Historically Underserved Populations	Opportunities for low-income and minority populations	Assessment of improved access to opportunities (activity nodes served, as described below) for low-income and minority populations within station areas and how the project would improve access for low-income and minority populations along the system to these nodes, as well as access for low-income and minority populations in the study area to major regional employment and educational destinations	High = Would improve access to activity nodes for higher than city average populations of minority and low-income populations Medium = Would not affect access to activity nodes for higher than city average populations of minority and low-income populations Low = Would worsen access to activity nodes for higher than city average populations of minority and low-income populations
		Percentage of rent-restricted or subsidized rental units within 10-minute walkshed (i.e., rent-and income-restricted housing units)	High = Percentage of rent-restricted or subsidized rental units within 10-minute walkshed of stations is more than 40% Medium = Percentage of rent-restricted or subsidized rental units within 10-minute walkshed of stations is 20% to 40% Low = Percentage of rent-restricted or subsidized rental units within 10-minute walkshed of stations is less than 20%
	Low-income population	Low-income population percentage (i.e., households below 2 times the federal poverty level) within 10-minute walkshed and 15-minute ride on connecting high frequency transit	High = Low-income population within analysis area is more than 6% higher than city average Medium = Low-income population within analysis area is within 6% (+/-) of city average Low = Low-income population within analysis area is more than 6% below city average
	Minority population	Minority population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	High = Minority population within analysis area is more than 6% higher than city average Medium = Minority population within analysis area is within 6% (+/-) of city average Low = Minority population within analysis area is more than 6% below city average
	Youth population (under 18)	Youth population (under 18) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	High = Youth population within analysis area is more than 6% higher than city average Medium = Youth population within analysis area is within 6% (+/-) of city average Low = Youth population within analysis area is more than 6% below city average
	Elderly population (65 and over)	Elderly population (65 and over) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	High = Elderly population within analysis area is more than 6% higher than city average Medium = Elderly population within analysis area is within 6% (+/-) of city average Low = Elderly population within analysis area is more than 6% below city average
	Limited English Proficiency (LEP) population	LEP population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit (Predominant languages spoken by LEP populations will be noted)	High = LEP population within analysis area is more than 6% higher than city average Medium = LEP population within analysis area is within 6% (+/-) of city average Low = LEP population within analysis area is more than 6% below city average
	Disabled population	Disabled population (includes those with hearing, vision, or ambulatory disability) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	High = Disabled population within analysis area is more than 6% higher than city average Medium = Disabled population within analysis area is within 6% (+/-) of city average Low = Disabled population within analysis area is more than 6% below city average

The Level 2 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 2 Screening Evaluation Criteria, Measures, Methods and Thresholds

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.			
Station Area Land Use Plan Consistency	Compatibility with Seattle designated Urban Centers and Villages	Percent of 10-minute station walkshed land area located within Seattle-designated Urban Centers and/or Villages	High = Over 70% of station walkshed within Urban Centers and Villages Medium = Between 30% and 70% of station walkshed within Urban Centers and Villages Low = Less than 30% of station walkshed within Urban Centers and Villages
	Station locations consistent with current local land use plans	Compatibility and consistency of station locations with current local land use plans	High = Station locations have greater consistency with local land use plans Medium = Station locations have moderate consistency with local land use plans Low = Station locations have less consistency with local land use plans
	Activity nodes served	Number of activity nodes (e.g., points of interest, gathering spaces, food banks, educational institutions, parks and recreational resources) within 10-minute walkshed of stations	High = Greater than 5% of average activity nodes within combined 10-minute walkshed of stations Medium = Within 5% of average activity nodes within combined 10-minute walkshed of stations Low = Lower than 5% of average activity nodes within combined 10-minute walkshed of stations
Modal Integration	Passenger transfers	Assessment of ease of passenger transfer for riders transferring between light rail lines, and between light rail and other motorized modes (i.e., bus, paratransit, drop-off/pick-up, transportation network companies [TNC]) at stations	High = Good to excellent passenger transfer opportunities Medium = Adequate passenger transfer opportunities Low = Limited passenger transfer opportunities
	Bus/rail and rail/rail integration	Assessment of peak-hour bus and rail trips that stop within one block of proposed station locations relative to the total number of peak-hour bus and rail trips within a 700 foot walk of proposed stations	High = Good to excellent transit integration opportunities and high number of routes serving station Medium = Average to good transportation integration opportunities and number of routes serving station Low = Limited transportation integration opportunities and/or low number of routes serving station
	Bicycle accessibility	Percent of bicycle facility miles (i.e., neighborhood greenway, bicycle lanes, protected bicycle lanes, and trails) to total roadway miles within 10-minute bikeshed of stations	High = Greatest percent of bicycle facility miles compared to other segment alternatives with average to high bikeshed area Medium = 2% less bicycle facility miles compared to other segment alternatives or alternatives with low to average bikeshed area Low = 4% less bicycle facility miles compared to other segment alternatives
	Pedestrian and persons with limited mobility accessibility	Assessment of number of intersections, percent of sidewalk/trail miles to total roadway miles, and impediments to pedestrian and American with Disabilities Act (ADA) access (i.e., large intersections with signal delay, adjacency to freight corridors/industrial uses, and substantial topography or grade challenges) within 10-minute walkshed of stations	High = Higher number of intersections, good to excellent pedestrian access and fewest impediments Medium = Moderate number of intersections, average to good pedestrian access and average impediments Low = Limited number of intersections, poor to fair pedestrian access and greatest impediments
Station Area Development Opportunities	Development potential	Percent of properties with development potential based on zoned capacity and market conditions within 10-minute walkshed of stations (5-minute walkshed in downtown)	High = Greater percent of properties with development potential Medium = Moderate percent of properties with development potential Low = Lower percent of properties with development potential
	Equitable development opportunities	Assessment of unique opportunities for equitable development enabled by station location and/or conceptual configuration	High = Greatest opportunities for equitable development that would accommodate future residential and employment growth based on station location and configuration Medium = Opportunities for equitable development that would accommodate future residential and employment growth based on station location and configuration Low = Limited opportunities for equitable development that would accommodate future residential and employment growth based on station location and configuration
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.			
Environmental Effects	National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle City Landmarks	Number of intersected or adjacent NRHP-listed, NRHP-eligible, and Seattle City Landmark properties based on Department of Archaeology and Historic Preservation (DAHP) data and Seattle City Landmark data	High = Less than 5 historic properties potentially affected Medium = Between 5 and 15 historic properties potentially affected Low = Greater than 15 historic properties potentially affected
	Potential archaeological resources	Percent of alternative length within previously identified archaeologically sensitive areas that are 500 feet (or 0.5 miles at water crossings) from alignment	High = Less than 25 percent of alternative length within Very High Risk or High Risk probability areas Medium = Between 25 and 75 percent of alternative length within Very High Risk or High Risk probability areas Low = More than 75 percent of alternative length within Very High Risk or High Risk probability areas

The Level 2 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 2 Screening Evaluation Criteria, Measures, Methods and Thresholds

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Environmental Effects (continued)	Parks and recreational resources	Number of and estimated acres of potential permanent impacts to parks and recreational resources	High = Less than 1 acre of potential permanent impacts to parks Medium = Between 1 and 4 acres of potential permanent impacts to parks Low = More than 4 acres of potential permanent impacts to parks
	Water resources	Estimated acres of potential permanent in-water impacts	High = No potential permanent in-water impacts Medium = Up to 0.5 acre of potential permanent in-water impacts Low = More than 0.5 acre of potential permanent in-water impacts
	Fish and wildlife habitat	Estimated acres of potential permanent impact to fish and wildlife habitat using city of Seattle environmentally critical areas	High = Less than 1 acres of potential permanent fish and wildlife habitat impacts Medium = Between 1 and 5 acres of potential permanent fish and wildlife habitat impacts Low = More than 5 acres of potential permanent fish and wildlife habitat impacts
	Hazardous materials	Number of contaminated sites of high concern potentially impacted, including Superfund sites	High = Less than 5 hazardous materials properties potentially affected Medium = Between 5 and 15 hazardous materials properties potentially affected Low = Greater than 15 hazardous materials properties potentially affected
	Visual	Assessment of length of elevated guideway adjacent to residential or other visually sensitive areas, including parks and historic properties and assessment of scale of elevated guideway in visually sensitive areas and potential impacts to State Environmental Policy Act (SEPA) Scenic Routes	High = Less than 0.5 mile adjacent to visually sensitive viewers, most elevated guideway not more than 75 feet high, and low potential to affect SEPA Scenic Routes Medium = Between 0.5 and 1.0 mile adjacent to visually sensitive viewers, some elevated guideway more than 75 feet high, and/or moderate potential to affect SEPA Scenic Routes Low = Greater than 1.0 mile potentially adjacent to visually sensitive viewers, extensive elevated guideway more than 75 feet high, and/or high potential to affect SEPA Scenic Routes
	Noise and vibration	Assessment of the number of potentially affected noise and vibration sensitive receivers, including residences, libraries, performance halls, schools, churches, and selected parks within 350 feet of alignment; presence of known noise and vibration sensitive facilities will be noted	High = Less than 250 noise and vibration sensitive receivers potentially affected Medium = Between 250 and 500 noise and vibration sensitive receivers potentially affected Low = Greater than 500 noise and vibration sensitive receivers potentially affected
	Property acquisitions and displacements	Number of properties potentially affected; does not include potential permanent or temporary easements or area for construction staging, traction power substations (TPSS) or underground station entrances	High = Less than approximately 30% of range of values within study segment Medium = Between approximately 30% and 70% of range of values within study segment Low = Greater than approximately 70% of range of values within study segment
		Number of potential residential unit displacements; does not include potential permanent or temporary easements or area for construction staging, TPSS or underground station entrances	High = Less than approximately 30% of range of values within study segment Medium = Between approximately 30% and 70% of range of values within study segment Low = Greater than approximately 70% of range of values within study segment
		Square feet of potential business displacements; does not include potential permanent or temporary easements or area for construction staging, TPSS or underground station entrances	High = Greater than approximately 70% of range of values within study segment Medium = Between approximately 30% and 70% of range of values within study segment Low = Less than approximately 30% of range of values within study segment
	Construction impacts	Assessment of temporary construction impacts to community, including potential for transportation, access, noise, vibration, and visual effects that could disrupt the community (e.g., existing residents, businesses, social service providers), and relative duration of construction and impacts to high volume traffic areas	High = Lower potential impact on community relative to other alternatives in segment Medium = Moderate potential for impacts to community relative to other alternatives in segment Low = More substantial potential for impacts to community relative to other alternatives in segment
	Burden on minority and low-income populations	Assessment of how potential acquisitions and displacements (residential and business) and visual, noise and construction impacts would affect minority and low-income populations relative to other communities and displacement risk from station area redevelopment	High = Little to no potential impact on minority or low-income communities Medium = Moderate potential for impacts on minority or low-income communities Low = Substantial potential for impacts on minority or low-income communities

The Level 2 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 2 Screening Evaluation Criteria, Measures, Methods and Thresholds

Purpose and Need / Evaluation Criteria	Measure	Methods	Thresholds
Traffic Operations	Traffic circulation and access	Effects on traffic and transit (i.e., bus and streetcar) operations, including potential lane restrictions, lane eliminations, turn restrictions, driveways impacted, and parking taken	High = Most of alignment is outside of roadway, with few to no changes in traffic patterns or access Medium = Potential for changes in traffic patterns or access to some properties; could be mitigated with local circulation modifications Low = Substantial impacts to traffic circulation and/or access to many properties; mitigation likely requires substantial roadway improvements
	Transportation facilities	Effects on existing transportation facilities, including bicycle lanes, sidewalks, traffic interchanges and other transportation infrastructure as warranted, and compatibility with planned facilities	High = Minor changes to transportation facilities, and/or moderate changes with opportunities to improve infrastructure Medium = Moderate changes to transportation facilities, with more limited opportunities to improve infrastructure Low = Substantial changes to transportation facilities, with no or limited opportunities to improve infrastructure
Economic Effects	Freight movement and access on land and water	Effects on existing and future freight mobility and future freight capacity expansion opportunities, including both on land and water	High = No or less than substantial effects on both land and water freight mobility and capacity expansion Medium = Substantial effects on either land or water freight mobility and capacity expansion Low = Substantial effects on both land and water freight mobility and capacity expansion
	Business and commerce effects	Effects on businesses, as well as commercial and industrial areas, including potential impacts during construction and operations from changes in access, travel patterns and displacements	High = Minimal effects on local businesses, as well as commercial and industrial areas Medium = Moderate effects on local businesses, as well as commercial and industrial areas Low = Substantial effects on local businesses, as well as commercial and industrial areas

Notes:
1. Based on Draft Purpose and Need Statement, with revisions incorporated from feedback received during the Level 1 evaluation.
2. Criteria are subject to change as alternatives are refined and screened at each level, as well as to incorporate stakeholder input.
3. Screening criteria and associated measures get progressively more detailed and quantitative as the alternatives are screened through Level 1, Level 2 and Level 3.
4. Agency and stakeholder input will be considered in the overall alternatives evaluation and screening process.
5. Qualitative measures ranked from high to low based on anticipated ability to achieve evaluation measure; “High” = higher ability to achieve measure, “Medium” = moderate ability to achieve measure, “Low” = lower ability to achieve measure; no weighting will be applied.

APPENDIX B

West Seattle/Duwamish Segment
Level 2 Evaluation Matrices

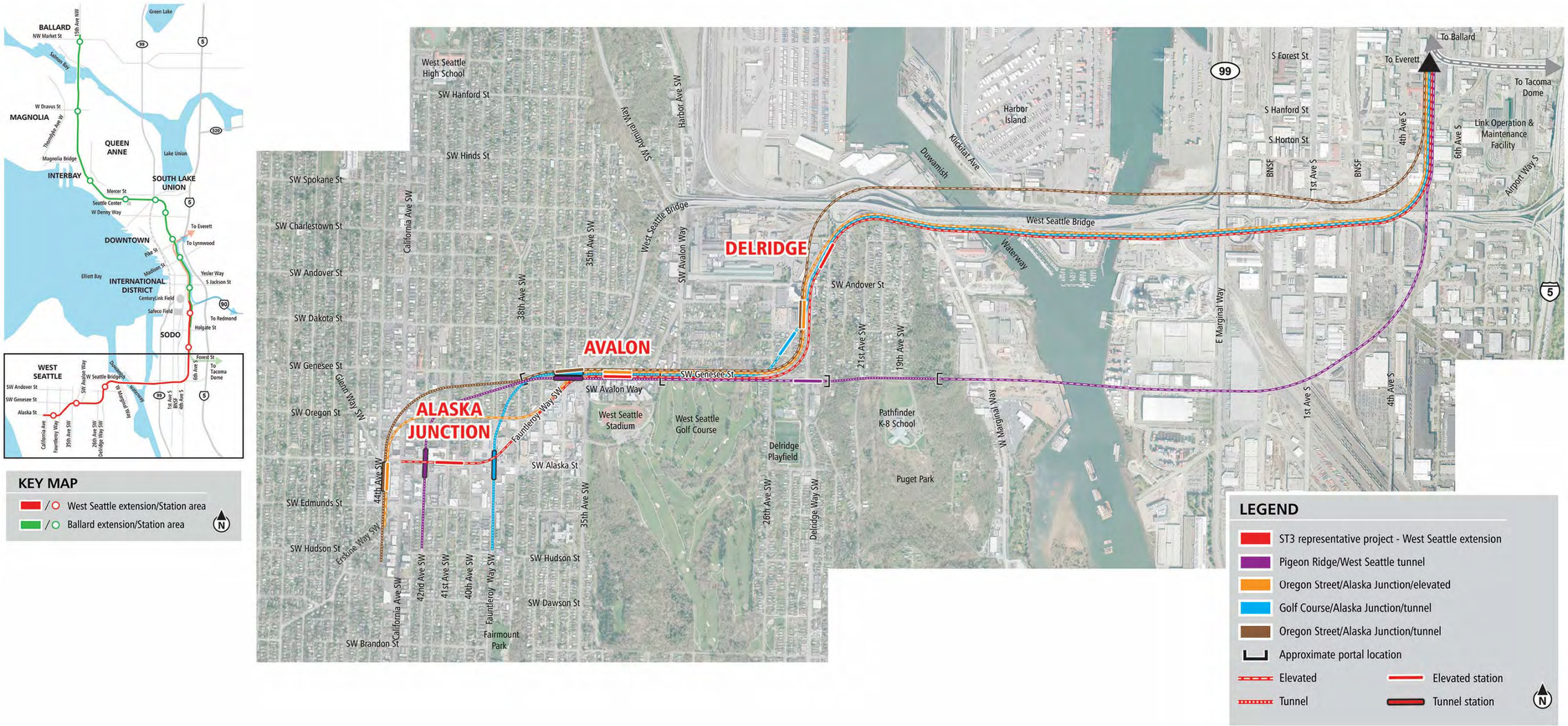

Figure B-1 West Seattle/Duwamish Segment—Level 2 Alternatives

The Level 2 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 2 Alternatives Evaluation Summary

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.						
Potential service interruptions and recoverability	Likelihood of service interruptions during peak and off-peak travel periods (High=low likelihood)	High	High	High	High	High
LRT travel times	Estimated travel times within segments based on alignment characteristics (minutes)	7 to 8	7 to 8	7 to 8	7 to 8	7 to 8
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.						
LRT network integration	Ability to accommodate spine segmentation, LRT system connectivity, and operational flexibility	Medium	Medium	Medium	Medium	Medium
Passenger carrying capacity in downtown	Combined passenger carrying capacity of downtown transit tunnels	Medium	Medium	Medium	Medium	Medium
Ridership potential	Future Puget Sound Regional Council (PSRC) forecasted 2040 total population and employment within 10-minute walkshed of WSBLE Project stations	11,200	12,500	12,000	10,700	12,500
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.						
Station proximity to PSRC-designated regional growth centers	Number of PSRC-designated regional growth centers served by stations	N/A	N/A	N/A	N/A	N/A
Station proximity to PSRC-designated manufacturing/industrial centers	Number of PSRC-designated manufacturing/industrial centers served by stations	1	1	1	1	1
Accommodates future LRT extension beyond ST3	Expansion potential of future LRT extensions identified in Sound Transit Long-Range Plan	Low	Medium	Low	High	Medium
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.						
Mode, route and general station locations per ST3	Consistency of mode, route and general station locations per ST3	High	High	High	Medium	High
Potential ST3 implementation schedule effects	Constructability, environmental or other issues/challenges that may cause WSBLE Project schedule risks	High	Low	High	Low	Low
Potential ST3 operating plan effects	Integration of WSBLE Project into existing LRT spine and overall system (i.e., special trackwork, movable bridge implications, etc.)	High	High	High	High	High
Engineering constraints	Compliance with Sound Transit Design Criteria Manual, design criteria from agencies with jurisdiction and federal regulations, and engineering obstacles associated with major infrastructure constraints	Medium	Low	Medium	Medium	High
Constructability issues	Constructability issues based on potential conflicts and technical challenges	Low	Low	Low	Low	Medium
Operational constraints	Assessment of operational constraints (e.g., access to maintenance facility, vertical grade, horizonal curvature, movable bridge, etc.)	Medium	High	Medium	Medium	Medium
Conceptual capital cost comparison	Conceptual capital cost comparison to ST3 Representative Project based on conceptual design quantities and current Sound Transit unit pricing (2017$)	--	$1,200 million increase	Similar	$700 million increase	$500 million increase
Operating cost impacts	Assessment of operations and maintenance (O&M) cost impacts	High	Medium	High	Medium	Medium

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.						
Opportunities for low-income and minority populations	Overlay of activity nodes data with minority, LEP, and low-income populations	Medium	Medium	Medium	Medium	Medium
	Percent of rent-restricted or subsidized rental units within 10-minute walkshed	15%	13%	14%	15%	13%
Low-income population	Low-income population percentage (i.e., households below 2 times the federal poverty level) within 10-minute walkshed and 15-minute ride on connecting high frequency transit	25% / 21%	24% / 21%	23% / 21%	26% / 21%	23% / 21%
Minority population	Minority population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	22% / 26%	23% / 26%	21% / 26%	23% / 26%	21% / 26%
Youth population (under 18)	Youth population (under 18) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	13% / 17%	14% / 17%	14% / 17%	13% / 17%	14% / 17%
Elderly population (65 and over)	Elderly population (65 and over) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	16% / 13%	15% / 13%	15% / 13%	16% / 13%	15% / 13%
Limited English Proficiency (LEP) population	LEP population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit (Predominant languages spoken by LEP populations will be noted)	3% / 4%	3% / 4%	3% / 4%	3% / 4%	3% / 4%
Disabled population	Disabled population (includes those with hearing, vision, or ambulatory disability) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	9% / 9%	9% / 9%	9% / 9%	9% / 9%	9% / 9%
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.						
Compatibility with Seattle designated Urban Centers and Villages	Percent of 10-minute station walkshed land area located within Seattle-designated Urban Centers and/or Villages	34%	31%	31%	35%	29%
Station locations consistent with current local land use plans	Compatibility and consistency of station locations with current local land use plans	High	High	High	High	High
Activity nodes served	Number of activity nodes within 10-minute walkshed of stations	40	41	42	38	42
Passenger transfers	Ease of passenger transfers for transit customers between motorized modes	Medium	High	Medium	Medium	High
Bus/rail and rail/rail integration	Assessment of peak-hour rail and bus trips immediately adjacent to stations	Medium	High	Medium	Medium	High
Bicycle accessibility	Percent of bicycle facility miles to roadway miles within 10-minute bikeshed of stations	14%	14%	15%	14%	15%
Pedestrian and persons with limited mobility accessibility	Assessment of number of intersections, percent of sidewalk/trail miles to total roadway miles, and impediments to pedestrian and American with Disabilities Act (ADA) access within 10-minute walkshed of stations	Medium	High	High	High	High
Development potential	Development potential within 10-minute walkshed of stations (5-minute walkshed in downtown)	13%	13%	13%	15%	12%
Equitable development opportunities	Assessment of unique opportunities for equitable development enabled by station location and/or conceptual configuration	Low	Low	Medium	Medium	High

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.						
National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle City Landmarks	Number of NRHP listed or eligible properties potentially affected	1	1	1	1	2
Potential archaeological resources	Assessment of the percent of alternative length within Very High Risk or High Risk probability areas using Department of Archaeology and Historic Preservation predictive model	Low	Low	Low	Low	Low
Parks and recreational resources	Estimated acres of potential impacts to parks	1.5	3.5	1.5	2.8	0.6
Water resources	Estimated acres of potential permanent in-water impacts	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fish and wildlife habitat	Estimated acres of potential permanent fish and wildlife habitat impacts	3.7	5.3	3.7	3.7	1.9
Hazardous materials	Number of contaminated sites of high concern potentially impacted, including Superfund sites	11	7	8	14	14
Visual	Miles of alignment adjacent to visually sensitive viewers, assessment of scale of elevated guideway in visually sensitive areas, and potential impacts to SEPA Scenic Routes	1.3	0.6	1.5	0.9	0.7
Noise and vibration	Assessment of the number of noise and vibration sensitive receivers potentially affected	Low	Low	Low	Medium	Low
Property acquisitions and displacements	Number of properties potentially affected	High	High	Low	High	Low
	Number of potential residential unit displacements	Medium	Low	Low	High	Low
	Square feet of potential business displacements	High	Medium	Low	High	Medium
Construction impacts	Assessment of temporary construction impacts to community, including potential for transportation, access, noise, vibration, and visual effects that could disrupt the community (e.g., existing residents, businesses, social service providers), and relative duration of construction and impacts to high volume traffic areas	Low	High	Low	Medium	Medium
Burden on minority and low-income populations	Potential acquisitions and displacements and visual, noise and construction impacts in areas with minority and low-income populations greater than the city average and overlay of displacement risk	High	High	High	High	High
Traffic circulation and access	Effects on traffic and transit (i.e., bus and streetcar) operations	Low	High	Medium	High	Medium
Transportation facilities	Effects on existing transportation facilities, including bicycle lanes, sidewalks, traffic interchanges and other transportation infrastructure as warranted, and compatibility with planned facilities	Low	High	Medium	Medium	High
Freight movement and access on land and water	Effects on existing and future freight mobility and future freight capacity expansion opportunities, including both on land and water	Medium	Medium	Medium	Medium	Low

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

West Seattle/Duwamish Segment						
Purpose and Need / Evaluation Measures and Methods		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Business and commerce effects	Effects on businesses, as well as commercial and industrial areas, including potential impacts during construction and operations from changes in access, travel patterns and displacements	Medium	High	Low	Medium	Medium

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native
3. Property Acquisitions and Displacements:
   Number of properties potentially affected: High = Less than 95 parcels; Medium = Between 95 and 115 parcels; Low = More than 115 parcels
   Number of potential residential displacements: High = Less than 85 units; Medium = Between 85 and 145 units; Low = More than 145 units
   Area of potential business displacements: High = Less than 650,000 square feet; Medium = Between 650,000 and 750,000 square feet; Low = More than 750,000 square feet

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.						
Reliable Service	Potential service interruptions and recoverability	High • Fully grade separated	High • Fully grade separated	High • Fully grade separated	High • Fully grade separated	High • Fully grade separated
Travel Times	LRT travel times	7 to 8 • Estimated 7 to 8 minute travel time measured from Alaska Junction Station to SODO Station • All alternatives have similar travel times	7 to 8 • Estimated 7 to 8 minute travel time measured from Alaska Junction Station to SODO Station • All alternatives have similar travel times	7 to 8 • Estimated 7 to 8 minute travel time measured from Alaska Junction Station to SODO Station • All alternatives have similar travel times	7 to 8 • Estimated 7 to 8 minute travel time measured from Alaska Junction Station to SODO Station • All alternatives have similar travel times	7 to 8 • Estimated 7 to 8 minute travel time measured from Alaska Junction Station to SODO Station • All alternatives have similar travel times
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.						
Regional Connectivity	LRT network integration	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity
Transit Capacity	Passenger carrying capacity in downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown
Projected Transit Demand	Ridership potential	11,200 • Approximately 11,200 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	12,500 • Approximately 12,500 forecasted population and employment within 10-minute walkshed of stations 6% greater than segment average due to well-spaced West Seattle stations and more southern Delridge Station	12,000 • Approximately 12,000 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	10,700 • Approximately 10,700 forecasted population and employment within 10-minute walkshed of stations 9% lower than segment average due to closely spaced Avalon and Alaska Junction stations	12,500 • Approximately 12,500 forecasted population and employment within 10-minute walkshed of stations 6% greater than segment average
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.						
Regional Centers Served	Station proximity to PSRC-designated regional growth centers	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment
	Station proximity to PSRC-designated manufacturing/industrial centers	1 • Delridge Station within reasonable walking distance of Duwamish manufacturing/industrial center	1 • Delridge Station within reasonable walking distance of Duwamish manufacturing/industrial center	1 • Delridge Station within reasonable walking distance of Duwamish manufacturing/industrial center	1 • Delridge Station within reasonable walking distance of Duwamish manufacturing/industrial center	1 • Delridge Station within reasonable walking distance of Duwamish manufacturing/industrial center
Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Low • Alaska Junction Station oriented east-west; difficult to turn south for future extension • Requires elevated structure on California Avenue SW	Medium • Alaska Junction Station oriented north-south in tunnel	Low • Alaska Junction Station elevated and oriented north-south, but west of California Avenue SW • Likely would require elevated structure extending south along California Avenue SW or parallel facility	High • Alaska Junction Station oriented north-south in tunnel • Closer to 35th Avenue SW	Medium • Alaska Junction Station in tunnel and oriented north-south, but west of California Avenue SW

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.						
ST3 Consistency	Mode, route and general station locations per ST3	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	Medium • Mode, route and general station locations moderately consistent with ST3 Plan due to location of Alaska Junction Station relative to Alaska Junction neighborhood	High • Mode, route and general station locations consistent with ST3 Plan
	Potential ST3 implementation schedule effects	High • Implementation schedule anticipated to be similar to ST3 Plan	Low • Inclusion of tunnel could increase implementation schedule	High • Implementation schedule anticipated to be similar to ST3 Plan	Low • Inclusion of tunnel could increase implementation schedule	Low • Inclusion of tunnel could increase implementation schedule
	Potential ST3 operating plan effects	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations
Technical Feasibility	Engineering constraints	Medium • Steep and unstable slope at Pigeon Point • Elevated column and pier close to Burlington Norther Santa Fe (BNSF) Railway tracks at SR 99 ramp • Long span bridges with straddle bents over S Spokane Street and SR 99 • High-level, long-span bridge structure over east Duwamish Waterway and over west Duwamish Waterway	Low • Tunnel portal in steep and unstable slope at Pigeon Ridge • Elevated guideway over Union Pacific Railroad (UPRR) Argo Yard • High-level, long-span bridge over Duwamish Waterway	Medium • Steep and unstable slope at Pigeon Point • Elevated column and pier close to BNSF Railway tracks at SR 99 ramp • Long span bridges with straddle bents over S Spokane Street and SR 99 • High-level, long-span bridge structure over east Duwamish Waterway and over west Duwamish Waterway	Medium • Steep and unstable slope at Pigeon Point • Elevated column and pier close to BNSF Railway tracks at SR 99 ramp • Long span bridges with straddle bents over S Spokane Street and SR 99 • High-level, long-span bridge structure over east Duwamish Waterway and over west Duwamish Waterway	High • Avoids steep and unstable slope at Pigeon Point • High-level, long-span bridge structure over east Duwamish Waterway and over west Duwamish Waterway
	Constructability issues	Low • Potential soil stabilization challenge at Pigeon Point • Potential maintenance of traffic challenges during construction over S Spokane Street, SR 99 south of West Seattle Bridge and its adjacent ramps • Potential maintenance of traffic challenges during construction along Delridge Way SW, SW Genesee Street, Fauntleroy Way SW and SW Alaska Street • Limited areas for construction staging and laydown for elevated long-span guideway spanning SR 99 • Limited in-water work window to construct long span bridges over east and west waterway	Low • Coordination of construction access and staging for elevated guideway over active UPRR Argo yard • Potential soil stabilization challenge at tunnel portal locations at Pigeon Ridge • Construction of guideway under Seattle City Light (SCL) high voltage overhead line • Limited in-water work window to construct long span bridges over Duwamish Waterway • Potential maintenance of traffic challenges during construction over Delridge Way SW, along SW Genesee Street, and under Fauntleroy Way SW and SW Alaska Street	Low • Potential soil stabilization challenge at Pigeon Point • Potential maintenance of traffic challenges during construction over S Spokane Street, SR 99 south of West Seattle Bridge and its adjacent ramps • Potential maintenance of traffic challenges during construction along Delridge Way SW, SW Genesee Street, Fauntleroy Way SW, SW Oregon Street and over California Avenue SW • Limited areas for construction staging and laydown for elevated long-span guideway spanning SR 99 • Limited in-water work window to construct long span bridges over east and west waterway	Low • Potential soil stabilization challenge at Pigeon Point • Potential maintenance of traffic challenges during construction over S Spokane Street, SR 99 south of West Seattle Bridge and its adjacent ramps • Potential maintenance of traffic challenges during construction along Delridge Way SW, SW Genesee Street, and under Fauntleroy Way SW and SW Alaska Street • Limited areas for construction staging and laydown for elevated long-span guideway spanning SR 99 • Limited in-water work window to construct long span bridges over east and west waterway	Medium • Avoids challenges of construction in Pigeon Point area • Coordination of construction access and staging for guideway columns and associated ground improvements at Terminal 18 on Harbor Island • Potential maintenance of traffic challenges during construction over West Seattle Bridge and Delridge ramps • Potential maintenance of traffic challenges during construction along Delridge Way SW, SW Genesee Street and over Fauntleroy Way SW • Limited in-water work window to construct long span bridges over east and west waterway

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives				
			ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Technical Feasibility (continued)	Operational constraints		Medium	High	Medium	Medium	Medium
			• Dual direction Operations and Maintenance Facility (OMF) access would be viable • Relatively tight radius curves crossing West Seattle Bridge and around Pigeon Point would result in reduced speed	• Dual direction OMF access would be viable and improved • Larger radius curves would result in potentially higher speeds	• Dual direction Operating and Maintenance Facility (OMF) access would be viable • Relatively tight radius curves crossing West Seattle Bridge and around Pigeon Point would result in reduced speed	• Dual direction OMF access would be viable • Relatively tight radius curves crossing West Seattle Bridge and around Pigeon Point would result in reduced speed	• Single direction OMF access would be viable; connecting guideway could be longer than other alternatives in this segment • Larger radius curves crossing West Seattle Bridge and avoiding Pigeon Point would result in potentially higher speeds
Financial Sustainability	Conceptual capital cost comparison		--	$1,200 million increase	Similar	$700 million increase	$500 million increase
			• Baseline for capital cost comparison to other alternatives within segment	• Approximately $1,200 million more than the ST3 Representative Project • Tunnel costs not included in ST3 financial plan or evaluation methodology	• Similar to the ST3 Representative Project	• Approximately $700 million more than the ST3 Representative Project • Tunnel costs not included in ST3 financial plan or evaluation methodology	• Approximately $500 million more than the ST3 Representative Project • Tunnel costs not included in ST3 financial plan or evaluation methodology
	Operating cost impacts		High	Medium	High	Medium	Medium
			• Elevated guideway could result in lower operating and maintenance costs (O&M) costs compared with alternatives that have tunnels	• Tunnel could result in higher O&M costs compared with elevated guideway alternatives	• Elevated guideway could result in lower O&M costs compared with alternatives that have tunnels	• Tunnel could result in higher O&M costs compared with elevated guideway alternatives	• Tunnel could result in higher O&M costs compared with elevated guideway alternatives
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.							
Historically Underserved Populations	Opportunities for low-income and minority populations	Assessment of improved access to opportunities	Medium	Medium	Medium	Medium	Medium
			• Stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 40 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	• Stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 40 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	• Stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 40 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	• Stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 40 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	• Stations are not located in areas of higher than average minority or low-income populations • Better access would be provided to about 40 activity nodes within 10-minute walkshed for historically underserved populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County
		Percent of rent-restricted or subsidized rental units	15%	13%	14%	15%	13%
			• 15% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 13% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 14% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 15% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 13% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Historically Underserved Populations (continued)	Low-income population	25% / 21%	24% / 21%	23% / 21%	26% / 21%	23% / 21%
		• City average is 24% • Low-income population within 10-minute walkshed is 1% above city average • Low-income population within 15-minute rideshed is 3% below city average • Average household income for walksheds is $84,880, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.1, similar to city average of 2.1	• City average is 24% • Low-income population within 10-minute walkshed is the same as city average • Low-income population within 15-minute rideshed is 3% below city average • Average household income for walksheds is $87,148, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.2, slightly higher than city average of 2.1	• City average is 24% • Low-income population within 10-minute walkshed is 1% below city average • Low-income population within 15-minute rideshed is 3% below city average • Average household income for walksheds is $84,880, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for the walksheds is 2.1, similar to city average of 2.1	• City average is 24% • Low-income population within 10-minute walkshed is 2% above city average • Low-income population within 15-minute rideshed is 3% below city average • Average household income for walksheds is $82,704, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.1, similar to city average of 2.1	• City average is 24% • Low-income population within 10-minute walkshed is 1% below city average • Low-income population within 15-minute rideshed is 3% below city average • Average household income for walksheds is $87,576, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.1, similar to city average of 2.1
	Minority population	22% / 26%	23% / 26%	21% / 26%	23% / 26%	21% / 26%
		• City average is 34% • Minority population within 10-minute walkshed is 12% below city average • Minority population within 15-minute rideshed is 8% below city average	• City average is 34% • Minority population within 10-minute walkshed is 11% below city average • Minority population within 15-minute rideshed is 8% below city average	• City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 8% below city average	• City average is 34% • Minority population within 10-minute walkshed is 11% below city average • Minority population within 15-minute rideshed is 8% below city average	• City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 8% below city average
	Youth population (under 18)	13% / 17%	14% / 17%	14% / 17%	13% / 17%	14% / 17%
		• City average is 15% • Youth population within 10-minute walkshed is 2% below city average • Youth population within 15-minute rideshed is 2% above city average	• City average is 15% • Youth population within 10-minute walkshed is 1% below city average • Youth population within 15-minute rideshed is 2% above city average	• City average is 15% • Youth population within 10-minute walkshed is 1% below city average • Youth population within 15-minute rideshed is 2% above city average	• City average is 15% • Youth population within 10-minute walkshed is 2% below city average • Youth population within 15-minute rideshed is 2% above city average	• City average is 15% • Youth population within 10-minute walkshed is 1% below city average • Youth population within 15-minute rideshed is 2% above city average
	Elderly population (65 and over)	16% / 13%	15% / 13%	15% / 13%	16% / 13%	15% / 13%
		• City average is 12% • Elderly population within 10-minute walkshed is 4% above city average • Elderly population within 15-minute rideshed is 1% above city average	• City average is 12% • Elderly population within 10-minute walkshed is 3% above city average • Elderly population within 15-minute rideshed is 1% above city average	• City average is 12% • Elderly population within 10-minute walkshed is 3% above city average • Elderly population within 15-minute rideshed is 1% above city average	• City average is 12% • Elderly population within 10-minute walkshed is 4% above city average • Elderly population within 15-minute rideshed is 1% above city average	• City average is 12% • Elderly population within 10-minute walkshed is 3% above city average • Elderly population within 15-minute rideshed is 1% above city average
	Limited English Proficiency (LEP) population	3% / 4%	3% / 4%	3% / 4%	3% / 4%	3% / 4%
		• City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 4% below city average • Predominant languages spoken by LEP populations are Other Asian and Pacific Island languages and Russian, Polish, or other Slavic languages	• City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 4% below city average • Predominant languages spoken by LEP populations are Other Asian and Pacific Island languages and Russian, Polish, or other Slavic languages	• City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 4% below city average • Predominant languages spoken by LEP populations are Other Asian and Pacific Island languages and Russian, Polish, or other Slavic languages	• City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 4% below city average • Predominant languages spoken by LEP populations are Other Asian and Pacific Island languages and Russian, Polish, or other Slavic languages	• City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 4% below city average • Predominant languages spoken by LEP populations are Other Asian and Pacific Island languages and Russian, Polish, or other Slavic languages

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Historically Underserverd Populations	Disabled population	9% / 9% • City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is the same as the city average	9% / 9% • City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is the same as the city average	9% / 9% • City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is the same as the city average	9% / 9% • City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is the same as the city average	9% / 9% • City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minuteute rideshed is the same as the city average
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.						
Station Area Land Use Plan Consistency	Compatibility with Seattle designated Urban Centers and Villages	34% • 34% percent of combined station walkshed within West Seattle Junction Hub Urban Village • Most of the walkshed within an Urban Village is at the Alaska Junction Station	31% • 31% percent of combined station walkshed within West Seattle Junction Hub Urban Village • Most of the walkshed within an Urban Village is at the Alaska Junction Station	31% • 31% percent of combined station walkshed within West Seattle Junction Hub Urban Village • Most of the West Seattle Junction Hub Urban Village is within the Alaska Junction Station walkshed	35% • 35% percent of combined station walkshed within West Seattle Junction Hub Urban Village • Most of the walkshed within an Urban Village is at the Alaska Junction Station due to the walkshed area being the smallest of all alternatives	29% • 29% percent of combined station walkshed within West Seattle Junction Hub Urban Village • Most of the West Seattle Junction Hub Urban Village is within the Alaska Junction Station walkshed
	Station locations consistent with current local land use plans	High • Local land use plans supportive of all three stations • Alaska Junction and Avalon Station locations would serve recently rezoned West Seattle Triangle area • North Delridge Draft Action Plan was completed in 2016 and includes Delridge Station area	High • Local land use plans supportive of all three stations • Alaska Junction and Avalon Station locations would serve recently rezoned West Seattle Triangle area • North Delridge Draft Action Plan was completed in 2016 and includes Delridge Station area	High • Local land use plans supportive of all three stations • Alaska Junction and Avalon Station locations would serve recently rezoned West Seattle Triangle area • North Delridge Draft Action Plan was completed in 2016 and includes Delridge Station area	High • Local land use plans supportive of all three stations • Alaska Junction and Avalon Station locations would serve recently rezoned West Seattle Triangle area • North Delridge Draft Action Plan was completed in 2016 and includes Delridge Station area	High • Local land use plans supportive of all three stations • Alaska Junction and Avalon Station locations would serve recently rezoned West Seattle Triangle area • North Delridge Draft Action Plan was completed in 2016 and includes Delridge Station area
	Activity nodes served	40 • 40 activity nodes served, including the West Seattle Food Bank, West Seattle Stadium, Youngstown Cultural Arts Center, several churches, and a welfare office	41 • 41 activity nodes served, including the West Seattle Food Bank, West Seattle Stadium, Youngstown Cultural Arts Center, several churches, and a welfare office	42 • 42 activity nodes served, including the West Seattle Food Bank, West Seattle Stadium, Youngstown Cultural Arts Center, several churches, and a welfare office	38 • 38 activity nodes served, including the West Seattle Food Bank, West Seattle Stadium, Youngstown Cultural Arts Center, several churches, and a welfare office	42 • 42 activity nodes served, including the West Seattle Food Bank, West Seattle Stadium, Youngstown Cultural Arts Center, several churches, and a welfare office
Modal Integration	Passenger transfers	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones • Avalon Station east of Fauntleroy Way SW is more difficult to access compared to other station locations at or just west of Fauntleroy Way SW	High • Most station locations provide space for adjacent bus and drop-off/pick-up connections	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones • Avalon Station east of Fauntleroy Way SW is more difficult to access compared to other station locations at or just west of Fauntleroy Way SW	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones • Delridge Station location east of 26th Avenue SW is more difficult to access from bus routes on Delridge Way SW compared to other alternatives	High • Most station locations provide space for adjacent bus and drop-off/pick-up connections

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Modal Integration (continued)	Bus/rail and rail/rail integration	Medium • Average to good transportation integration opportunities; 71% of transit routes less than one block walk of stations • Some bus zones may be farther than a one block walk or require more than two signalized crossings such as at Avalon Station located east of Fauntleroy Way SW	High • Most stations provide connections adjacent to all streets; 88% of transit routes less than one block walk of stations	Medium • Average to good transportation integration opportunities; 71% of transit routes less than one block walk of stations • Some bus zones may be farther than a one block walk or require more than two signalized crossings such as at Avalon Station located east of Fauntleroy Way SW	Medium • Average to good transportation integration opportunities; 73% of transit routes less than one block walk of stations • Some bus zones may be farther than a one block walk or require more than two signalized crossings such as at Delridge Station east of 26th Avenue SW	High • Most stations provide connections adjacent to all streets; 88% of transit routes less than one block walk of stations
	Bicycle accessibility	14% • 14% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 4.5 square miles • Similar bike facilities as other segment alternatives	14% • 14% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 4.6 square miles • Similar bike facilities as other segment alternatives	15% • 15% of bicycle facility miles to roadway miles within bikeshed of stations; largest bikeshed area is 4.7 square miles • Similar bike facilities as other segment alternatives	14% • 14% of bicycle facility miles to roadway miles within bikeshed of stations; smallest bikeshed area is 4.1 square miles • Similar bike facilities as other segment alternatives	15% • 15% of bicycle facility miles to roadway miles within bikeshed of stations; largest bikeshed area is 4.7 square miles • Similar bike facilities as other segment alternatives
	Pedestrian and persons with limited mobility accessibility	Medium • 199 intersections within combined walkshed • 92% of sidewalk/trail miles to total roadway miles within combined walkshed • Major freight route near the Avalon Station • Delridge Station is located near the Duwamish Manufacturing/Industrial Center • Delridge Station is not located near a traditional street grid to provide good pedestrian access and is located near the West Seattle Bridge eastbound on-ramp with limited existing pedestrian crossings on Delridge Way SW	High • 201 intersections within combined walkshed • 91% of sidewalk/trail miles to total roadway miles within combined walkshed • Major freight route near the Avalon Station • Delridge Station is centrally located near a signalized intersection with a set of stairs leading to Pigeon Ridge, east of the station	High • 215 intersections within combined walkshed • 89% of sidewalk/trail miles to total roadway miles within combined walkshed • Delridge Station is located on west side of arterial within a relatively flat area • Delridge Station is located near the Duwamish Manufacturing/Industrial Center • Major freight route near the Avalon Station	High • 170 intersections within combined walkshed; fewest number of intersections due to a smaller combined walkshed compared to other West Seattle alternatives • 92% of sidewalk/trail miles to total roadway miles within combined walkshed • Delridge Station is centrally located and near a signalized intersection at SW Genesee Street and within a relatively flat area • Major freight route near the Avalon and Alaska Junction stations • The multi-leg intersection at SW Alaska Street and Fauntleroy Way SW is complex	High • 228 intersections within combined walkshed; greatest number of intersections mostly due to a larger combined walkshed compared to other West Seattle alternatives • 89% of sidewalk/trail miles to total roadway miles within combined walkshed • Delridge Station is located on west side of arterial within a relatively flat area • Delridge Station is located near the Duwamish Manufacturing/Industrial Center • Major freight route near the Avalon Station
Station Area Development Opportunities	Development potential	13% • 13% of parcels with redevelopment potential	13% • 13% of parcels with redevelopment potential	13% • 13% of parcels with redevelopment potential	15% • 15% of parcels with redevelopment potential; alternative has more redevelopable land within walksheds than other alternatives, indicating the walksheds have more parcels that are underdeveloped (relative to current zoning) and/or unlikely to redevelop (such as parks, public facilities, churches, and condos)	12% • 12% of parcels with redevelopment potential
	Equitable development opportunities	Low • Limited opportunities at all three station locations	Low • Limited opportunities at Delridge and Avalon stations • Some opportunities at Alaska Junction Station	Medium • Greater opportunity near Delridge Station • Limited opportunities at Avalon and Alaska Junction stations	Medium • Greater opportunity near Delridge Station based on Station Charrette • Limited opportunities at Avalon and Alaska Junction stations	High • Greater opportunities near Delridge and Alaska Junction stations • A tunnel configuration at Alaska Junction Station provides greater opportunities than elevated configuration in similar location

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

	Purpose and Need / Evaluation Criteria / Measures	Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.						
Environmental Effects	National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle City Landmarks	1	1	1	1	2
		• 1 NRHP-listed, NRHP-eligible and/or Seattle Landmark property could be directly affected by the project	• 1 NRHP-listed, NRHP-eligible and/or Seattle Landmark property could be directly affected by the project	• 1 NRHP-listed, NRHP-eligible and/or Seattle Landmark property could be directly affected by the project	• 1 NRHP-listed, NRHP-eligible and/or Seattle Landmark property could be directly affected by the project	• 2 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project
	Potential archaeological resources	Low	Low	Low	Low	Low
		• 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites • Bridge crossing in area with greater disturbance from construction of other infrastructure	• 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites • Precontact archaeological sites may have minimally disturbed in this area and may retain a higher degree of integrity compared to those archaeological sites immediately adjacent to existing infrastructure along/over the Duwamish Waterway • Closest to National Register-listed archaeology site	• 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites • Bridge crossing in area with greater disturbance from construction of other infrastructure	• 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites • Bridge crossing in area with greater disturbance from construction of other infrastructure	• 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites • Bridge crossing in area with greater disturbance from construction of other infrastructure
	Parks and recreational resources	1.5	3.5	1.5	2.8	0.6
		• Approximately 1.5 acres of permanent impacts to 3 parks: Harbor Marina Corporate Center open space at Terminal 102, West Duwamish Greenbelt, and West Seattle Golf Course	• Approximately 3.5 acres of permanent impacts to 4 parks: Delridge Playfield, Pigeon Point Park, West Duwamish Greenbelt, and West Seattle Golf Course	• Approximately 1.5 acres of permanent impacts to 3 parks: Harbor Marina Corporate Center at Terminal 102, West Duwamish Greenbelt, and West Seattle Golf Course	• Approximately 2.8 acres of permanent impacts to 3 parks: Harbor Marina Corporate Center at Terminal 102, West Duwamish Greenbelt, and West Seattle Golf Course	• Approximately 0.6 acre of permanent impact to 1 park: West Seattle Golf Course
	Water resources	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
		• Approximately < 0.1 acre of permanent impact in West Duwamish Waterway	• Approximately < 0.1 acre of permanent impact in Duwamish Waterway (main channel)	• Approximately < 0.1 acre of permanent impact in West Duwamish Waterway	• Approximately < 0.1 acre of permanent impact in West Duwamish Waterway	• Approximately < 0.1 acre of permanent impact in both West and East Duwamish Waterways
	Fish and wildlife habitat	3.7	5.3	3.7	3.7	1.9
		• Approximately 3.7 acres of permanent habitat impacts • Requires clearing steep slope on Pigeon Point; revegetation with low-growing shrubs is expected to be possible • Heron rookery has been observed in West Duwamish Greenbelt within 250 feet of the alignment	• Approximately 5.3 acres of permanent habitat impacts • Requires clearing for elevated guideway and tunnel portal; areas within 200 feet on each side of alignment may likely only be replanted with low-growing trees and shrubs • Historical presence of bald eagle and great blue heron nests within 200 feet of north side of the alignment	• Approximately 3.7 acres of permanent habitat impacts • Requires clearing steep slope on Pigeon Point; revegetation with low-growing shrubs is expected to be possible • Heron rookery has been observed in West Duwamish Greenbelt within 250 feet of the alignment	• Approximately 3.7 acres of permanent habitat impacts • Requires clearing steep slope on Pigeon Point; revegetation with low-growing shrubs is expected to be possible • Heron rookery has been observed in West Duwamish Greenbelt within 250 feet of the alignment	• Approximately 1.9 acres of permanent habitat impacts • Avoids impacts on West Duwamish Greenbelt

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives				
			ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Environmental Effects (continued)	Hazardous materials		11	7	8	14	14
			• Approximately 11 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)	• Approximately 7 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Lower Duwamish Waterway Superfund Site	• Approximately 8 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)	• Approximately 14 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)	• Approximately 14 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel • Crosses the Harbor Island Superfund Site (includes West and East Duwamish Waterways)
	Visual		1.3	0.6	1.5	0.9	0.7
			• More than 1 mile elevated guideway near visually sensitive viewers; about 900 feet over 75 feet high • Highest point in a visually sensitive area would be about 160 feet (along SW Genesee Street) • About 0.3 mile would be on Fauntleroy Way SW, a State Environmental Policy Act (SEPA) Scenic Route • Would be approximately 100 feet south of the West Seattle Bridge, a SEPA Scenic Route	• Between 0.5 and 1 mile of elevated guideway near visually sensitive viewers; none over 75 feet high • Future light rail bridge structure over Duwamish Waterway would be in an area without adjacent infrastructure, but also has limited visual sensitivity	• More than 1 mile of elevated guideway near visually sensitive areas; longest over 75 feet high • Highest point in a visually sensitive area would be about 160 feet (along SW Genesee Street) • About 0.2 mile would be on Fauntleroy Way SW, a SEPA Scenic Route • Would be approximately 100 feet south of the West Seattle Bridge, a SEPA Scenic Route	• Between 0.5 and 1 mile of elevated guideway near visually sensitive viewers; none over 75 feet high • Would be approximately 100 feet south of the West Seattle Bridge, a SEPA Scenic Route	• Between 0.5 and 1 mile of elevated guideway near visually sensitive viewers; about 40% over 75 feet high • Highest point in a visually sensitive area would be about 140 feet (along SW Genesee Street) • Avalon Station would be elevated over Fauntleroy Way SW, a SEPA Scenic Route • Would be up to 300 feet north of the West Seattle Bridge, a SEPA Scenic Route
	Noise and vibration		Low	Low	Low	Medium	Low
			• Approximately 830 noise and vibration sensitive receivers within 350 feet of the alternative	• Approximately 530 noise and vibration sensitive receivers within 350 feet of the alternative	• Approximately 650 noise and vibration sensitive receivers within 350 feet of the alternative	• Approximately 460 noise and vibration sensitive receivers within 350 feet of the alternative	• Approximately 530 noise and vibration sensitive receivers within 350 feet of the alternative
	Property acquisitions and displacements	Number of potentially affected properties	High	High	Low	High	Low
			• Less than 95 parcels affected	• Less than 95 parcels affected	• More than 115 parcels affected	• Less than 95 parcels affected	• More than 115 parcels affected
		Number of potential residential unit displacements	Medium	Low	Low	High	Low
			• Between 85 and 145 potential residential unit displacements • Displacements would occur in Delridge neighborhood and around Avalon Station	• More than 145 potential residential unit displacements • Displacements would primarily occur around Alaska Junction Station	• More than 145 potential residential unit displacements • Displacements would occur in Delridge neighborhood and around Avalon and Alaska Junction stations	• Less than 85 potential residential unit displacements • Displacements would occur in Delridge neighborhood and around Avalon Station	• More than 145 potential residential unit displacements • Displacements would occur in Delridge neighborhood, for the tunnel portal west of Fauntleroy Avenue SW, and around Avalon and Alaska Junction stations

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Environmental Effects (continued)	Property acquisitions and displacements (continued)	Square feet of potential business displacements	High • Less than 650,000 square feet of potential business displacements • Displacements would primarily occur in Duwamish industrial areas, and near the Alaska Junction	Medium • Between 650,000 and 750,000 square feet of potential business displacements • Displacements would primarily occur in Duwamish industrial areas	Low • More than 750,000 square feet of potential business displacements • Displacements would primarily occur in Duwamish industrial areas, along the west side of Delridge Way SW, and around the Alaska Junction	High • Less than 650,000 square feet of potential business displacements • Displacements would primarily occur in Duwamish industrial areas, and along the west side of Delridge Way SW	Medium • Between 650,000 and 750,000 square feet of potential business displacements • Displacements would primarily occur in Duwamish industrial areas, and along the west side of Delridge Way SW
	Construction impacts		Low • Potential for visual, noise and vibration impacts on residences on or near Delridge Way SW, SW Genesee Street, and SW Alaska Street, as well as the north edge of Pigeon Point • Potential for traffic impacts on the following roads from construction of the elevated guideway and stations: Delridge Way SW (14,000 cars per day), SW Genesee Street (4,200 cars per day), Fauntleroy Way SW (23,000 cars per day), and SW Alaska Street (12,000 cars per day); diversion of these vehicles could create traffic impacts on other roadways	High • Potentially least disruptive to the Delridge and Pigeon Point neighborhoods • Potential for visual, noise and vibration impacts on residences on or near SW Genesee Street for elevated guideway and station construction, and near 42nd Avenue SW for tunnel station construction • Potential for traffic impacts on the following roads from construction of the elevated guideway and stations: Delridge Way SW (14,000 cars per day) and SW Genesee Street (4,200 cars per day); and potential for traffic impacts on Fauntleroy Way SW (23,000 cars per day), SW Alaska Street (12,000 cars per day) and 42nd Avenue SW (less than 5,000 cars per day) for cut-and-cover station construction; diversion of these vehicles could create traffic impacts on other roadways • Impacts on other major roadways would generally be avoided • Construction could impact use of a portion of Youngstown Cultural Arts Center, Delridge Playfield (which includes the Delridge Community Center and Skatepark) and West Seattle Golf Course properties for the greater West Seattle community	Low • Greatest potential disruption to the Alaska Junction neighborhood • Potential for visual, noise and vibration impacts on residences on or near Delridge Way SW, SW Genesee Street, SW Oregon Street, California Avenue SW and 44th Avenue SW, as well as the north edge of Pigeon Point • Potential for traffic impacts on the following roads from construction of the elevated guideway and stations: Delridge Way SW (14,000 cars per day), SW Genesee Street (4,200 cars per day), Fauntleroy Way SW (23,000 cars per day), and SW Oregon Street (9,500 cars per day); diversion of these vehicles could create traffic impacts on other roadways	Medium • Potential for visual, noise and vibration impacts on residences on or near Delridge Way SW, SW Genesee Street and Fauntleroy Way SW, as well as the north edge of Pigeon Point • Potential for traffic impacts on the following roads from construction of the elevated guideway and stations: Delridge Way SW (14,000 cars per day), SW Genesee Street (4,200 cars per day), and Fauntleroy Way SW (23,000 cars per day); diversion of these vehicles could create traffic impacts on other roadways • Construction could impact use of a portion the West Seattle Golf Course for the greater West Seattle community	Medium • Construction on the north side of the West Seattle Bridge would reduce construction impacts on the Pigeon Point neighborhood • Potential for visual, noise and vibration impacts on residences on or near Delridge Way SW and SW Genesee Street for elevated guideway and station construction, and around 44th Avenue SW and SW Alaska Street for tunnel station construction • Potential for traffic impacts on the following roads from construction of the elevated guideway and stations: Delridge Way SW (14,000 cars per day), SW Genesee Street (4,200 cars per day), and Fauntleroy Way SW (23,000 cars per day); diversion of these vehicles could create traffic impacts on other roadways
	Burden on minority and low-income populations		High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk

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Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Traffic Operations	Traffic circulation and access	Low • Alignment in street along Delridge Way SW, Fauntleroy Way SW and SW Alaska Street; driveway access changes expected for parcels along these streets and SW Genesee Street	High • Most of alignment is outside of roadways or in a tunnel	Medium • Alignment in street along Fauntleroy Way SW and SW Oregon Street; driveway access changes expected for parcels along these streets and SW Genesee Street	High • Most of alignment is outside of roadways or in a tunnel • Local street impacts within Delridge at station location	Medium • Requires closing 37th Avenue SW roadway approaching the tunnel portal; however, local circulation is still possible with the grid-like street network in the area • Driveway access changes expected for parcels along SW Genesee Street
Traffic Operations	Transportation facilities	Low • Transportation facilities affected include crossing West Seattle Bridge and SR 99 ramps, major intersections in West Seattle (Fauntleroy Way SW/SW Alaska Street, Fauntleroy Way SW/SW Genesee Street) • Modification to planned Fauntleroy Boulevard Project and potential RapidRide improvements on Delridge corridor • Partial use of SW Alaska Street to accommodate station	High • Transportation facilities affected include crossing West Seattle Bridge and SR 99 (although less challenging compared to other alternatives); major intersection in West Seattle (Fauntleroy Way SW/SW Genesee Street)	Medium • Transportation facilities affected include crossing West Seattle Bridge and SR 99 ramps, major intersections in West Seattle (Fauntleroy Way SW/SW Genesee Street) • Modification to planned Fauntleroy Boulevard Project and potential RapidRide improvements on Delridge corridor	Medium • Transportation facilities affected include crossing West Seattle Bridge and SR 99 ramps, major intersection in West Seattle (Fauntleroy Way SW/SW Genesee Street)	High • Transportation facilities affected include crossing West Seattle Bridge and SR 99 ramps (although less challenging compared to other alternatives) , major intersection in West Seattle (Fauntleroy Way SW/SW Genesee Street) • Modification to planned Fauntleroy Boulevard Project and potential RapidRide improvements on Delridge corridor
Economic Effects	Freight movement and access on land and water	Medium • Maintains BNSF lines on south end of Harbor Island • No direct impacts expected to emergency access bridge over east waterway • Bridges would span Duwamish navigation channel, but could have temporary construction impacts to waterway operations • Columns along Delridge Way SW, Fauntleroy Way SW, and SW Alaska Street could affect truck access to local businesses • No direct impacts expected to Terminal 5 or Terminal 18 access or operations	Medium • Potentially requires a column in the main waterway, but outside of navigation channel • Potential impact to internal yard operations at Terminal 106 • Potential for temporary construction impacts to S Idaho Street • Potential for temporary construction impacts to Nucor Terminal 105 truck and rail movements • Avoids Port of Seattle container Terminal 5, 18 and 25, as well as Port industrial properties at Terminal 102 and 104	Medium • Maintains BNSF lines on south end of Harbor Island • No direct impacts expected to emergency access bridge over east waterway • Bridges would span Duwamish navigation channel, but could have temporary construction impacts to waterway operations • Columns along Delridge Way SW and Fauntleroy Way SW could affect truck access to local businesses • No direct impacts expected to Terminal 5 or Terminal 18 access or operations	Medium • Maintains BNSF lines on south end of Harbor Island • No direct impacts expected to emergency access bridge over east waterway • Bridges would span Duwamish navigation channel, but could have temporary construction impacts to waterway operations • Columns along Delridge Way SW could affect truck access to local businesses • No direct impacts expected to Terminal 5 or Terminal 18 access or operations	Low • Possible temporary construction parking and gate queue storage impacts at Terminal 18, including vehicle access to Westway Feed Products and Harley Marine Services • Maintains rail access to Westway Feed Products • Bridges would span both east and west waterways, navigation not likely permanently affected • Alternate moorage locations could be needed for fuel barges that are frequently stored in East Waterway (adjacent to and across from Harley Marine) • Could displace buildings at Terminal 7 (private)

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

The Level 2 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 2 Alternatives Evaluation

West Seattle/Duwamish Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives				
		ST3 Representative Project	Pigeon Ridge/West Seattle Tunnel	Oregon Street/Alaska Junction/Elevated	Golf Course/Alaska Junction/Tunnel	Oregon Street/Alaska Junction/Tunnel
Economic Effects (continued)	Business and commerce effects	Medium	High	Low	Medium	Medium
		• Lower amount of business displacement of West Seattle alternatives, but could displace several businesses along Fauntleroy Way SW • Could displace several industrial businesses on both sides of Duwamish Waterway and in Terminal 102 office complex • Could displace multi-story office building for Delridge Station • Construction traffic impacts within Duwamish industrial area, Harbor Island Terminals 102 and 104, and smaller businesses along Fauntleroy Way SW and SW Alaska Street	• Moderate amount of business displacement of West Seattle alternatives • Could displace several industrial businesses on both sides of Duwamish Waterway • Could displace one grocery store in Alaska Junction area • Reduced construction traffic impacts to small businesses because alternative would be in a tunnel in West Seattle; some construction traffic impacts within Duwamish industrial area and smaller businesses along 42nd Avenue SW	• Greatest amount of business displacement of West Seattle alternatives • Could displace several industrial businesses on both sides of Duwamish Waterway and in Terminal 102 office complex • Could displace multi-story office buildings for Delridge Station • Could displace multiple businesses on California Avenue SW and remove much of the off-street parking in Alaska Junction area • Construction traffic impacts within Duwamish industrial area and smaller businesses along Fauntleroy Way SW, SW Oregon Street, California Avenue SW and 44th Avenue SW	• Lower amount of business displacement of West Seattle alternatives • Could displace several industrial businesses on both sides of Duwamish Waterway and in Terminal 102 office complex • Reduced construction traffic impacts to small businesses because alternative would be in a tunnel within West Seattle; some construction traffic impacts to businesses along Fauntleroy Way SW	• Moderate amount of business displacement compared to other West Seattle alternatives • Could displace several industrial businesses on both sides of Duwamish Waterway and on Harbor Island, but avoids Terminal 102 • Reduced construction traffic impacts to small businesses because alternative would be in a tunnel west of 37th Avenue SW • Some construction traffic impacts on Harbor Island and within Duwamish industrial area and smaller businesses along 44th Avenue SW • Could displace multi-story office buildings for Delridge Station

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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APPENDIX C

SODO and Chinatown/International District Segment
Level 2 Evaluation Matrices

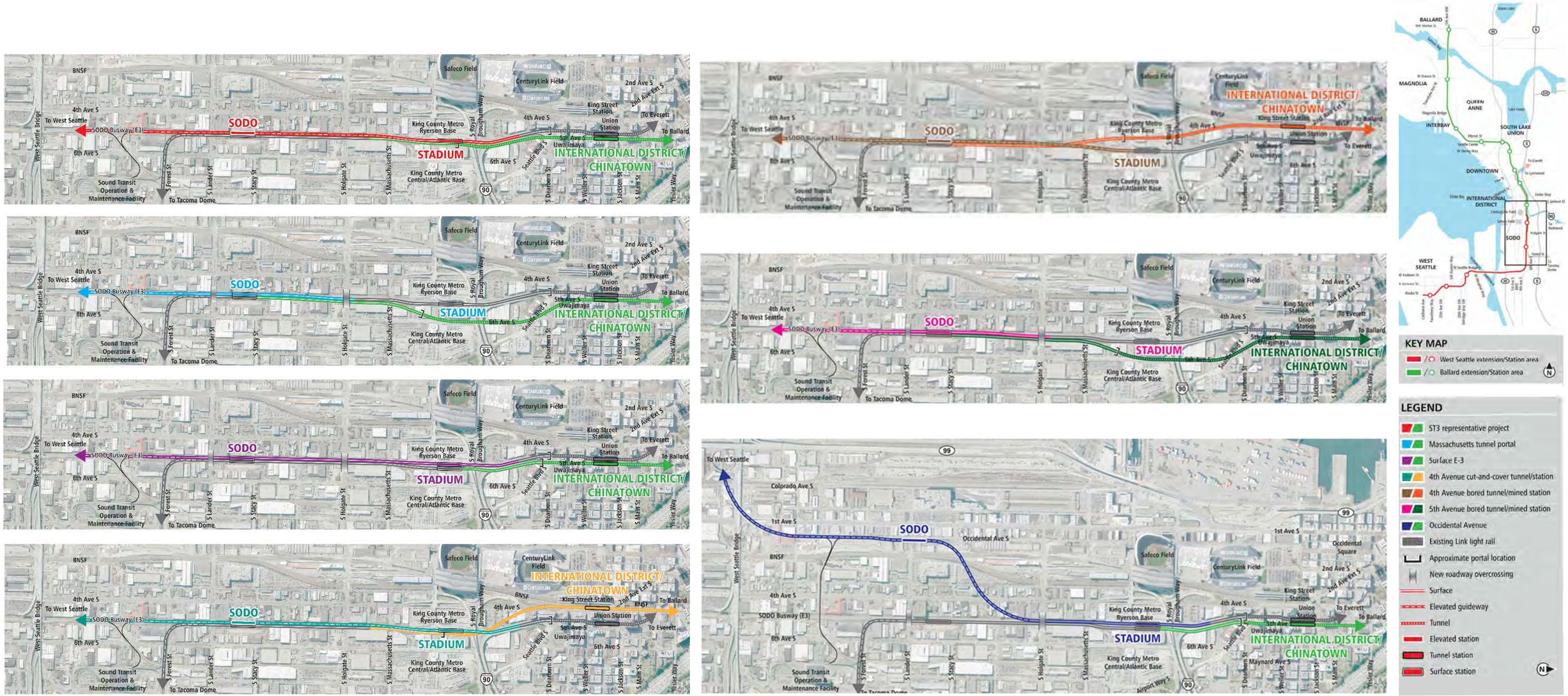

Figure C-1 SODO and Chinatown/International District Segment—Level 2 Alternatives

The Level 2 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 2 Alternatives Evaluation Summary

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives						
		ST3 Representative Project	Massachusetts Tunnel Portal	Surface E-3	Occidental Avenue	4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.								
Potential service interruptions and recoverability	Likelihood of service interruptions during peak and off-peak travel periods (High=low likelihood)	Low	Medium	High	High	Low	Low	Medium
LRT travel times	Estimated travel times within segments based on alignment characteristics (minutes)	3 to 4	3 to 4	3 to 4	3 to 4	3 to 4	3 to 4	3 to 4
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.								
LRT network integration	Ability to accommodate spine segmentation, LRT system connectivity, and operational flexibility	Medium	Medium	High	Medium	Medium	Medium	Medium
Passenger carrying capacity in downtown	Combined passenger carrying capacity of downtown transit tunnels	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Ridership potential	Future Puget Sound Regional Council (PSRC) forecasted 2040 total population and employment within 10-minute walkshed of WSBLE Project stations	35,900	35,900	35,900	37,100	35,300	35,300	35,900
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.								
Station proximity to PSRC-designated regional growth centers	Number of PSRC-designated regional growth centers served by stations	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Station proximity to PSRC-designated manufacturing/industrial centers	Number of PSRC-designated manufacturing/industrial centers served by stations	1	1	1	1	1	1	1
Accommodates future LRT extension beyond ST3	Expansion potential of future LRT extensions identified in Sound Transit Long-Range Plan	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.								
Mode, route and general station locations per ST3	Consistency of mode, route and general station locations per ST3	High	High	High	Medium	High	High	High
Potential ST3 implementation schedule effects	Constructability, environmental or other issues/challenges that may cause WSBLE Project schedule risks	High	High	High	High	Low	Low	Medium
Potential ST3 operating plan effects	Integration of WSBLE Project into existing LRT spine and overall system (i.e., special trackwork, movable bridge implications, etc.)	Medium	Medium	High	High	High	Low	Medium
Engineering constraints	Compliance with Sound Transit Design Criteria Manual, design criteria from agencies with jurisdiction and federal regulations, and engineering obstacles associated with major infrastructure constraints	Medium	Medium	Medium	Low	Low	Low	Medium
Constructability issues	Constructability issues based on potential conflicts and technical challenges	Medium	Medium	Medium	Low	Low	Low	Medium
Operational constraints	Assessment of operational constraints (e.g., access to maintenance facility, vertical grade, horizonal curvature, movable bridge, etc.)	Medium	Medium	High	Medium	Medium	Low	Medium
Conceptual capital cost comparison	Conceptual capital cost comparison to ST3 Representative Project based on conceptual design quantities and current Sound Transit unit pricing (2017$)	--	$200 million decrease	$400 million decrease	Similar (+$200 million in SODO)	$600 million increase	$500 million increase	Similar

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives						
		ST3 Representative Project	Massachusetts Tunnel Portal	Surface E-3	Occidental Avenue	4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station
Operating cost impacts	Assessment of operations and maintenance (O&M) cost impacts	Medium	Medium	High	Medium	Medium	Medium	Medium
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.								
Opportunities for low-income and minority populations	Overlay of activity nodes data with minority, LEP, and low-income populations	High	High	High	High	High	High	High
	Percent of rent-restricted or subsidized rental units within 10-minute walkshed	80%	80%	80%	73%	75%	75%	80%
Low-income population	Low-income population percentage (i.e., households below 2 times the federal poverty level) within 10-minute walkshed and 15-minute ride on connecting high frequency transit	59% / 49%	59% / 49%	59% / 49%	58% /49%	57% / 49%	57% / 49%	59% / 49%
Minority population	Minority population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	65% / 54%	65% / 54%	65% / 54%	65% / 53%	63% / 54%	63% / 54%	65% / 54%
Youth population (under 18)	Youth population (under 18) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	7% / 7%	7% / 7%	7% / 7%	7% / 8%	6% / 7%	6% / 7%	7% / 7%
Elderly population (65 and over)	Elderly population (65 and over) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	20% / 19%	20% / 19%	20% / 19%	20% / 19%	20% / 19%	20% / 19%	20% / 19%
Limited English Proficiency (LEP) population	LEP population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit (Predominant languages spoken by LEP populations will be noted)	30% / 19%	30% / 19%	30% / 19%	30% / 18%	28% / 19%	28% / 19%	30% / 19%
Disabled population	Disabled population (includes those with hearing, vision, or ambulatory disability) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	24% / 19%	24% / 19%	24% / 19%	24% / 19%	25% / 19%	25% / 19%	24% / 19%
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.								
Compatibility with Seattle designated Urban Centers and Villages	Percent of 10-minute station walkshed land area located within Seattle-designated Urban Centers and/or Villages	41%	41%	41%	37%	41%	41%	41%
Station locations consistent with current local land use plans	Compatibility and consistency of station locations with current local land use plans	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Activity nodes served	Number of activity nodes within 10-minute walkshed of stations	57	57	57	56	54	54	57
Passenger transfers	Ease of passenger transfers for transit customers between motorized modes	High	Medium	Medium	Medium	Medium	Low	Low
Bus/rail and rail/rail integration	Assessment of peak-hour rail and bus trips immediately adjacent to stations	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Bicycle accessibility	Percent of bicycle facility miles to roadway miles within 10-minute bikeshed of stations	21%	21%	21%	21%	21%	21%	21%
Pedestrian and persons with limited mobility accessibility	Assessment of number of intersections, percent of sidewalk/trail miles to total roadway miles, and impediments to pedestrian and American with Disabilities Act (ADA) access within 10-minute walkshed of stations	Medium	Medium	Medium	Medium	Medium	Medium	Medium

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives						
		ST3 Representative Project	Massachusetts Tunnel Portal	Surface E-3	Occidental Avenue	4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station
Development potential	Development potential within 10-minute walkshed of stations (5-minute walkshed in downtown)	14%	14%	14%	15%	13%	13%	14%
Equitable development opportunities	Assessment of unique opportunities for equitable development enabled by station location and/or conceptual configuration	Low	Medium	Low	High	Medium	Low	Medium
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.								
National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle City Landmarks	Number of NRHP listed or eligible properties potentially affected	3	2	3	3	5	2	3
Potential archaeological resources	Assessment of the percent of alternative length within Very High Risk or High Risk probability areas using Department of Archaeology and Historic Preservation predictive model	Low	Low	Low	Low	Low	Low	Low
Parks and recreational resources	Estimated acres of potential impacts to parks	0	0	0	0	0	0	0
Water resources	Estimated acres of potential permanent in-water impacts	0	0	0	0	0	0	0
Fish and wildlife habitat	Estimated acres of potential permanent fish and wildlife habitat impacts	0	0	0	0	0	0	0
Hazardous materials	Number of contaminated sites of high concern potentially impacted, including Superfund sites	4	9	4	6	5	9	9
Visual	Miles of alignment adjacent to visually sensitive viewers, assessment of scale of elevated guideway in visually sensitive areas, and potential impacts to SEPA Scenic Routes	0	0	0	0	0	0	0
Noise and vibration	Assessment of the number of noise and vibration sensitive receivers potentially affected	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Property acquisitions and displacements	Number of properties potentially affected	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Number of potential residential unit displacements	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Square feet of potential business displacements	High	Low	High	Low	Low	High	Low
Construction impacts	Assessment of temporary construction impacts to community, including potential for transportation, access, noise, vibration, and visual effects that could disrupt the community (e.g., existing residents, businesses, social service providers), and relative duration of construction and impacts to high volume traffic areas	Low	High	Medium	Medium	Low	Low	High
Burden on minority and low-income populations	Potential acquisitions and displacements and visual, noise and construction impacts in areas with minority and low-income populations greater than the city average and overlay of displacement risk	Medium	Medium	Medium	Medium	Low	Low	High
Traffic circulation and access	Effects on traffic and transit (i.e., bus and streetcar) operations	Medium	High	Medium	Medium	Low	Medium	High
Transportation facilities	Effects on existing transportation facilities, including bicycle lanes, sidewalks, traffic interchanges and other transportation infrastructure as warranted, and compatibility with planned facilities	Low	High	Medium	Medium	Low	Low	High

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives						
		ST3 Representative Project	Massachusetts Tunnel Portal	Surface E-3	Occidental Avenue	4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station
Freight movement and access on land and water	Effects on existing and future freight mobility and future freight capacity expansion opportunities, including both on land and water	Medium	High	Medium	Low	Low	Low	High
Business and commerce effects	Effects on businesses, as well as commercial and industrial areas, including potential impacts during construction and operations from changes in access, travel patterns and displacements	Medium	Medium	Medium	Low	Medium	Medium	High

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native
3. Property Acquisitions and Displacements:
   Number of properties potentially affected: Medium = Between 10 and 20 parcels, due to small variation in impacts all alternatives in this segment were rated equally
   Number of potential residential displacements: Medium = Less than 50 units, due to small variation in impacts all alternatives in this segment were rated equally
   Area of potential business displacements: High = Less than 200,000 square feet; Medium = Between 200,000 and 325,000 square feet; Low = More than 325,000 square feet

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative	Massachusetts Tunnel	Surface	Occidental
		Project	Portal	E-3	Avenue
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.					
Reliable Service	Potential service interruptions and recoverability	Low • Continue to have at-grade crossings for existing Link light rail at Royal Brougham Way S, S Lander Street and S Holgate Street	Medium • Proposed roadway overpasses for grade separation at Lander and Holgate; existing Link light rail would continue to have an at-grade crossing at Royal Brougham Way S	High • No at-grade crossings; proposed roadway overpasses for grade separation at S Lander Street and S Holgate Street, and closure of through vehicle traffic on Royal Brougham Way S	High • No at-grade crossings; proposed roadway overpasses for grade separation at S Lander and S Holgate Street, and closure of through vehicle traffic on Royal Brougham Way S
Travel Times	LRT travel times	3 to 4 • Estimated 3 to 4 minute travel time measured from SODO Station to International District/Chinatown Station • All alternatives have similar travel times	3 to 4 • Estimated 3 to 4 minute travel time measured from SODO Station to International District/Chinatown Station • All alternatives have similar travel times	3 to 4 • Estimated 3 to 4 minute travel time measured from SODO Station to International District/Chinatown Station • All alternatives have similar travel times	3 to 4 • Estimated 3 to 4 minute travel time measured from SODO Station to International District/Chinatown Station • All alternatives have similar travel times
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.					
Regional Connectivity	LRT network integration	Medium • Facilitates spine segmentation	Medium • Facilitates spine segmentation	High • Facilitates additional connectivity and operational flexibility beyond spine segmentation	Medium • Facilitates spine segmentation
Transit Capacity	Passenger carrying capacity in downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown
Projected Transit Demand	Ridership potential	35,900 • Approximately 35,900 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	35,900 • Approximately 35,900 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	35,900 • Approximately 35,900 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	37,100 • Approximately 37,100 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.					
Regional Centers Served	Station proximity to PSRC-designated regional growth centers	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment
	Station proximity to PSRC-designated manufacturing/industrial centers	1 • SODO and Stadium stations located in Duwamish manufacturing/industrial center	1 • SODO and Stadium stations located in Duwamish manufacturing/industrial center	1 • SODO and Stadium stations located in Duwamish manufacturing/industrial center	1 • SODO and Stadium stations located in Duwamish manufacturing/industrial center
Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Medium • Consistent with Sound Transit Long-Range Plan	Medium • Consistent with Sound Transit Long-Range Plan	Medium • Consistent with Sound Transit Long-Range Plan	Medium • Consistent with Sound Transit Long-Range Plan

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative	Massachusetts Tunnel	Surface	Occidental
		Project	Portal	E-3	Avenue
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.					
ST3 Consistency	Mode, route and general station locations per ST3	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	Medium • Mode, route and general station locations moderately consistent with ST3 Plan due to location of SODO Station and degraded transfer with existing SODO Station assumed in ST3 Plan
	Potential ST3 implementation schedule effects	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan
	Potential ST3 operating plan effects	Medium • May not facilitate all desired special trackwork for track interconnections	Medium • May not facilitate all desired special trackwork for track interconnection but more opportunities than ST3 Representative Project	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations
Technical Feasibility	Engineering constraints	Medium • Could require Washington State Department of Transportation (WSDOT)/East Link structure modifications • Elevated guideway would likely require greatest amount of ground improvements • Could result in impacts to King County Ryerson Base during construction • Potential location of guideway columns to minimize impact to Burlington Northern-Santa Fe (BNSF)/Union Pacific Railroad (UPRR) • Could require "S" development encroachment and right-of-way (ROW) needs	Medium • Could result in proximity issue to existing foundations of WSDOT/East Link structures • Minimizes elevated guideway and associated ground improvements • Could require Seattle Department of Transportation (SDOT) approval for roadway grade separations (S Lander Street, S Holgate Street) • Least impact to King County Ryerson Base • BNSF/UPRR freight rail impacted north of S Lander Street due to roadway grade separation • Could require "S" development minimal encroachment	Medium • Minimizes impacts to WSDOT/East Link structures • Minimizes elevated guideway and associated ground improvements • Reduces design of cut-and-cover tunnel in assumed poor soils and high water table • Could require SDOT approval for roadway grade separations (S Lander Street, S Holgate Street) and Royal Brougham Way S closure • Additional ROW is needed at the King County Ryerson Base for the new Stadium Station west of the existing station (to remain) • BNSF/UPRR freight rail likely impacted north of S Lander Street due to roadway overcrossing and SODO Station footprint • Potential "S" development encroachment and ROW needs	Low • Concept increases long-span elevated guideway structure • Long-span crossing of BNSF active tracks, LRT mainline and OMF connection • OMF connection includes elevated guideway • At-grade guideway from Stadium Station to the north likely resulting in less impacts to WSDOT/East Link structures • Reduces interference to E3 busway and SCL overhead transmission lines • Could require SDOT approval for roadway grade separations (S Lander Street, S Holgate Street) and Royal Brougham Way S closure • Additional ROW is needed at the King County Ryerson Base for the new Stadium Station west of the existing station (to remain) • BNSF/UPRR freight rail likely impacted north of S Lander Street due to roadway grade separation

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative	Massachusetts Tunnel	Surface	Occidental
		Project	Portal	E-3	Avenue
Technical Feasibility (continued)	Constructability issues	Medium	Medium	Medium	Low
		• Bored tunnel portal in Chinatown/International District constrained work area • Light rail lines at different elevations for most of E3 busway would create limited area for construction staging, which could result in increased service disruption • Proximity to Immigration and Naturalization Service (INS) (historic immigration building) property could restrain work area • South tunnel portal requires WSDOT/East Link structure modifications • Cut-and-cover tunnel constrained work zone, headroom issues (i.e., construction clearance below the existing WSDOT ramps), poor soils and high water table • Cut-and-cover tunnel portal and retained cut and proximity to operating trackway may need temporary track and temporary closure of Stadium Station	• Bored tunnel portal, with largest work zone for tunnel portal • Light rail lines at different elevations for most of E3 busway would create limited area for construction staging, which could result in increased service disruption • Proximity to D-2 ramp and SR 90 ramp foundations crossing Royal Brougham Way S, may require ground improvements or other measures to existing foundations • No construction on existing LRT line north of S Holgate Street and no impacts to Stadium Station • Bored tunnel and portal through poor soils and high water table	• Bored tunnel portal in Chinatown/International District constrained work area • Cut-and-cover tunnel portal south of Seattle Boulevard in constrained work area • South cut-and-cover tunnel portal would not require WSDOT/East Link structure modifications • No impacts to Stadium Station • Both light rail lines at-grade in E3 busway would increase area for construction staging, which would likely result in least amount of service disruption • Roadway overcrossing structures in poor soils; would require protection of existing utilities • Proximity to INS (historic immigration building) property could constrain work area	• Increases long-span elevated guideway structure • Bored tunnel portal in Chinatown/International District in constrained work area • Cut-and-cover tunnel portal south of Seattle Boulevard in constrained work area • South cut-and-cover tunnel portal would likely not require WSDOT/East Link structure modifications • No impacts to existing Stadium Station • Both light rail lines at-grade in E3 busway would likely increase area for track construction phasing • Roadway overcrossing structures in poor soils and would require protection of existing utilities • Proximity to INS (historic immigration building) property could constrain work area
	Operational constraints	Medium	Medium	High	Medium
		• Generally meets operational goals and pocket tracks • At-grade roadway crossings on Ballard to Tacoma Line at S Holgate Street and S Lander Street, and on Everett-West Seattle Line at Royal Brougham Way S • Provides connection between West Seattle and Ballard lines; some movements may require reversing directions	• Meets operational goals and pocket tracks • At-grade roadway crossings on Everett to West Seattle Line at Royal Brougham Way S (existing) • Provides connection between West Seattle and Ballard lines	• Meets operational goals and pocket tracks • Eliminates light rail grade crossings for both lines • More opportunities for special trackwork and connections between West Seattle and Ballard lines	• Meets operational goals and pocket tracks • Eliminates light rail grade crossings for both lines • Degraded connection to OMF results in less efficient operations • Layout includes special trackwork for pocket track and double cross over connecting LRT lines; southbound Ballard line to southbound West Seattle line would require traveling reverse direction
Financial Sustainability	Conceptual capital cost comparison	--	$200 million decrease	$400 million decrease	Similar (+$200 million in SODO)
		• Baseline for capital cost comparison to other alternatives within segment	• Approximately $200 million less than the ST3 Representative Project	• Approximately $400 million less than the ST3 Representative Project	• Similar to the ST3 Representative Project (+$200 million in SODO)
	Operating cost impacts	Medium	Medium	High	Medium
		• Elevated guideway could result in higher O&M costs compared with at-grade alignment	• Longer tunnel could result in higher O&M costs compared with at-grade alignment	• At-grade alignment and shorter tunnel could result in lowest O&M costs	• Elevated guideway could result in higher O&M costs compared with at-grade alignment

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 1 of 2)			
			ST3 Representative	Massachusetts Tunnel	Surface	Occidental
			Project	Portal	E-3	Avenue
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.						
Historically Underserved Populations	Opportunities for low-income and minority populations	Assessment of improved access to opportunities	High	High	High	High
			• International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90%/45%) • International District/Chinatown Station would be located in area with an average annual household income below 2 times the federal poverty level for a 2-person household • Access to approximately 40 activity nodes in West Seattle and 25 to 35 activity nodes in Interbay/Ballard would be improved for the population in this area	• International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90%/45%) • International District/Chinatown Station would be located in area with an average annual household income below 2 times the federal poverty level for a 2-person household • Access to approximately 40 activity nodes in West Seattle and 25 to 35 activity nodes in Interbay/Ballard would be improved for the population in this area	• International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90%/45%) • International District/Chinatown Station would be located in area with an average annual household income below 2 times the federal poverty level for a 2-person household • Access to approximately 40 activity nodes in West Seattle and 25 to 35 activity nodes in Interbay/Ballard would be improved for the population in this area	• International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90%/45%) • International District/Chinatown Station would be located in area with an average annual household income below 2 times the federal poverty level for a 2-person household • Access to approximately 40 activity nodes in West Seattle and 25 to 35 activity nodes in Interbay/Ballard would be improved for the population in this area
		Percent of rent-restricted or subsidized rental units	80%	80%	80%	73%
			• 80% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 80% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 80% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 73% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units
	Low-income population		59% / 49%	59% / 49%	59% / 49%	58% /49%
			• City average is 24% • Low-income population within 10-minute walkshed is 35% above city average • Low-income population within 15-minute rideshed is 25% above city average • Average household income for walksheds is $47,642, which is less than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.7, less than city average of 2.1	• City average is 24% • Low-income population within 10-minute walkshed is 35% above city average • Low-income population within 15-minute rideshed is 25% above city average • Average household income for walksheds is $47,642, which is less than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.7, less than city average of 2.1	• City average is 24% • Low-income population within 10-minute walkshed is 35% above city average • Low-income population within 15-minute rideshed is 25% above city average • Average household income for walksheds is $47,642, which is less than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.7, less than city average of 2.1	• City average is 24% • Low-income population within 10-minute walkshed is 34% above city average • Low-income population within 15-minute rideshed is 25% above city average • Average household income for walksheds is $47,642, which is less than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.7, less than city average of 2.1
	Minority population		65% / 54%	65% / 54%	65% / 54%	65% / 53%
			• City average is 34% • Minority population within 10-minute walkshed is 31% above city average • Minority population within 15-minute rideshed is 20% above city average	• City average is 34% • Minority population within 10-minute walkshed is 31% above city average • Minority population within 15-minute rideshed is 20% above city average	• City average is 34% • Minority population within 10-minute walkshed is 31% above city average • Minority population within 15-minute rideshed is 20% above city average	• City average is 34% • Minority population within 10-minute walkshed is 31% above city average • Minority population within 15-minute rideshed is 19% above city average
	Youth population (under 18)		7% / 7%	7% / 7%	7% / 7%	7% / 8%
			• City average is 15% • Youth population within 10-minute walkshed is 8% below city average • Youth population within 15-minute rideshed is 8% below city average	• City average is 15% • Youth population within 10-minute walkshed is 8% below city average • Youth population within 15-minute rideshed is 8% below city average	• City average is 15% • Youth population within 10-minute walkshed is 8% below city average • Youth population within 15-minute rideshed is 8% below city average	• City average is 15% • Youth population within 10-minute walkshed is 8% below city average • Youth population within 15-minute rideshed is 7% below city average

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative	Massachusetts Tunnel	Surface	Occidental
		Project	Portal	E-3	Avenue
Historically Underserved Populations (continued)	Elderly population (65 and over)	20% / 19%	20% / 19%	20% / 19%	20% / 19%
		• City average is 12% • Elderly population within 10-minute walkshed is 8% above city average • Elderly population within 15-minute rideshed is 7% above city average	• City average is 12% • Elderly population within 10-minute walkshed is 8% above city average • Elderly population within 15-minute rideshed is 7% above city average	• City average is 12% • Elderly population within 10-minute walkshed is 8% above city average • Elderly population within 15-minute rideshed is 7% above city average	• City average is 12% • Elderly population within 10-minute walkshed is 8% above city average • Elderly population within 15-minute rideshed is 7% above city average
	Limited English Proficiency (LEP) population	30% / 19%	30% / 19%	30% / 19%	30% / 18%
		• City average is 8% • LEP population within 10-minute walkshed is 22% above city average • LEP population within 15-minute rideshed is 11% above city average • Predominant language spoken by LEP populations is Chinese	• City average is 8% • LEP population within 10-minute walkshed is 22% above city average • LEP population within 15-minute rideshed is 11% above city average • Predominant language spoken by LEP populations is Chinese	• City average is 8% • LEP population within 10-minute walkshed is 22% above city average • LEP population within 15-minute rideshed is 11% above city average • Predominant language spoken by LEP populations is Chinese	• City average is 8% • LEP population within 10-minute walkshed is 22% above city average • LEP population within 15-minute rideshed is 10% above city average • Predominant language spoken by LEP populations is Chinese
	Disabled population	24% / 19%	24% / 19%	24% / 19%	24% / 19%
		• City average is 9% • Disabled population within 10-minute walkshed is 15% above city average • Disabled population within 15-minute rideshed is 10% above city average	• City average is 9% • Disabled population within 10-minute walkshed is 15% above city average • Disabled population within 15-minute rideshed is 10% above city average	• City average is 9% • Disabled population within 10-minute walkshed is 15% above city average • Disabled population within 15-minute rideshed is 10% above city average	• City average is 9% • Disabled population within 10-minute walkshed is 15% above city average • Disabled population within 15-minute rideshed is 10% above city average
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.					
Station Area Land Use Plan Consistency	Compatibility with Seattle designated Urban Centers and Villages	41%	41%	41%	37%
		• International District/Chinatown Station walkshed includes primarily the Pioneer Square and Chinatown-International District Urban Center Villages; 41% of combined station walkshed within urban center and villages • The combined walkshed for the three stations is small (579 acres) due to the long block sizes, therefore skewing the percentage	• International District/Chinatown Station walkshed includes primarily the Pioneer Square and Chinatown-International District Urban Center Villages; 41% of combined station walkshed within urban center and villages • The combined walkshed for the three stations is small (579 acres) due to the long block sizes, therefore skewing the percentage	• International District/Chinatown Station walkshed includes primarily the Pioneer Square and Chinatown-International District Urban Center Villages; 41% of combined station walkshed within urban center and villages • The combined walkshed for the three stations is small (579 acres) due to the long block sizes, therefore skewing the percentage	• International District/Chinatown Station walkshed includes primarily the Pioneer Square and Chinatown-International District Urban Center Villages; 37% of combined station walkshed within urban center and villages • The combined walkshed for the three stations is small (638 acres) due to the long block sizes, therefore skewing the percentage
	Station locations consistent with current local land use plans	Medium	Medium	Medium	Medium
		• Strong local land use plans in the International District/Chinatown Station area, including recent rezoning around historic Chinatown • Stadium and SODO stations are within the Manufacturing and Industrial areas with some recent planning around uses in industrial lands	• Strong local land use plans in the International District/Chinatown Station area, including recent rezoning around historic Chinatown • Stadium and SODO stations are within the Manufacturing and Industrial areas with some recent planning around uses in industrial lands	• Strong local land use plans in the International District/Chinatown Station area, including recent rezoning around historic Chinatown • Stadium and SODO stations are within the Manufacturing and Industrial areas with some recent planning around uses in industrial lands	• Strong local land use plans in the International District/Chinatown Station area, including recent rezoning around historic Chinatown • Stadium and SODO stations are within the Manufacturing and Industrial areas with some recent planning around uses in industrial lands
	Activity nodes served	57	57	57	56
		• 57 activity nodes served, including Seattle City Hall, food banks, International District/Chinatown Community Center, Century Link Field and Safeco Field	• 57 activity nodes served, including Seattle City Hall, food banks, International District/Chinatown Community Center, Century Link Field and Safeco Field	• 57 activity nodes served, including Seattle City Hall, food banks, International District/Chinatown Community Center, Century Link Field and Safeco Field	• 56 activity nodes served, including Seattle City Hall, food banks, International District/Chinatown Community Center, Century Link Field and Safeco Field

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	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative	Massachusetts Tunnel	Surface	Occidental
		Project	Portal	E-3	Avenue
Modal Integration	Passenger transfers	High • Most station locations provide space for adjacent bus and drop-off/pick-up connections	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones • Proposed S Lander Street grade separation limits opportunities to site bus zones and drop-off/pick-up activity adjacent to SODO Station	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones • Proposed S Lander Street grade separation limits opportunities to site bus zones and drop-off/pick-up activity adjacent to SODO Station	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones • Proposed S Lander Street grade separation limits opportunities to site bus zones and drop-off/pick-up activity adjacent to SODO Station
	Bus/rail and rail/rail integration	Medium • Good bus access at proposed stations; 93% of transit routes less than one block walk of stations • Bus zones likely on adjacent cross streets to existing SODO Station	Medium • Average to good transportation integration opportunities; 68% of transit routes less than one block walk of stations • Limited opportunities to site bus zones adjacent to SODO Station with S Lander Street grade separation • Good transfer opportunities at International District/Chinatown Station	Medium • Average to good transportation integration opportunities; 68% of transit routes less than one block walk of stations • Limited opportunities to site bus zones adjacent to SODO Station with S Lander Street grade separation • Good transfer opportunities at International District/Chinatown Station	Medium • Good bus access at proposed stations; 93% of transit routes less than one block walk of stations • Bus zones likely on adjacent cross streets to existing SODO Station • Degraded rail/rail integration due to distance between SODO stations
	Bicycle accessibility	21% • 21% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 3.5 square miles • Similar bike facilities as other segment alternatives	21% • 21% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 3.5 square miles • Similar bike facilities as other segment alternatives	21% • 21% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 3.5 square miles • Similar bike facilities as other segment alternatives	21% • 21% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 3.7 square miles • Similar bike facilities as other segment alternatives
	Pedestrian and persons with limited mobility accessibility	Medium • 203 intersections within combined walksheds • 69% of sidewalk/trail miles to total roadway miles within combined walksheds • The pedestrian environment includes major roadways, long north-south blocks, manufacturing/industrial parcels with long curb cuts and truck traffic, streets without sidewalks, and BNSF Railway tracks • SODO and Stadium stations located within the Greater Duwamish Manufacturing/Industrial Center	Medium • 203 intersections within combined walksheds • 69% of sidewalk/trail miles to total roadway miles within combined walksheds • The pedestrian environment includes major roadways, long north-south blocks, manufacturing/industrial parcels with long curb cuts and truck traffic, streets without sidewalks, and BNSF Railway tracks • SODO and Stadium stations located within the Greater Duwamish Manufacturing/Industrial Center	Medium • 203 intersections within combined walksheds • 69% of sidewalk/trail miles to total roadway miles within combined walksheds • The pedestrian environment includes major roadways, long north-south blocks, manufacturing/industrial parcels with long curb cuts and truck traffic, streets without sidewalks, and BNSF Railway tracks • SODO and Stadium stations located within the Greater Duwamish Manufacturing/Industrial Center	Medium • 205 intersections within combined walksheds • 71% of sidewalk/trail miles to total roadway miles within combined walksheds • The SODO Station is located closer to 1st Avenue S with limited access to the west due to railroad ROW and industrial uses • The pedestrian environment includes major roadways, long north-south blocks, manufacturing/industrial parcels with long curb cuts and truck traffic, streets without sidewalks, and BNSF Railway tracks • SODO and Stadium stations located within the Greater Duwamish Manufacturing/Industrial Center
Station Area Development Opportunities	Development potential	14% • Little difference among alternatives since station locations are similar • 14% of parcels with redevelopment potential	14% • Little difference among alternatives since station locations are similar • 14% of parcels with redevelopment potential	14% • Little difference among alternatives since station locations are similar • 14% of parcels with redevelopment potential	15% • Little difference among alternatives since station locations are similar • 15% of parcels with redevelopment potential • Slight increase compared to other alternatives due to location of SODO Station on Occidental Avenue S

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SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative	Massachusetts Tunnel	Surface	Occidental
		Project	Portal	E-3	Avenue
Station Area Development Opportunities (continued)	Equitable development opportunities	Low • Greater opportunities south of Airport Way S between International District/Chinatown Station and Stadium Station east of I-90 bus lane	Medium • Greater opportunities south of Airport Way S between International District/Chinatown Station and Stadium Station east of I-90 bus lane • Property acquisitions along 6th Avenue S could create potential equitable development opportunities	Low • Greater opportunities south of Airport Way S between International District/Chinatown Station and Stadium Station east of I-90 bus lane	High • Greater opportunities south of Airport Way S between International District/Chinatown Station and Stadium Station and near the SODO Station on Occidental Avenue S; however, most of the area is zoned for manufacturing/industrial uses, which may impact the types of equitable development opportunities • Greatest amount of property acquisitions could create potential equitable development opportunities
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.					
Environmental Effects	National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle City Landmarks	3 • 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	2 • 2 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	3 • 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	3 • 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts
	Potential archaeological resources	Low • 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites	Low • 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites	Low • 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites	Low • 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites
	Parks and recreational resources	0 • No parks would be permanently impacted	0 • No parks would be permanently impacted	0 • No parks would be permanently impacted	0 • No parks would be permanently impacted
	Water resources	0 • No potential for permanent in-water impacts	0 • No potential for permanent in-water impacts	0 • No potential for permanent in-water impacts	0 • No potential for permanent in-water impacts
	Fish and wildlife habitat	0 • No permanent fish and wildlife habitat impacts	0 • No permanent fish and wildlife habitat impacts	0 • No permanent fish and wildlife habitat impacts	0 • No permanent fish and wildlife habitat impacts
	Hazardous materials	4 • Approximately 4 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	9 • Approximately 9 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	4 • Approximately 4 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	6 • Approximately 6 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 1 of 2)			
			ST3 Representative	Massachusetts Tunnel	Surface	Occidental
			Project	Portal	E-3	Avenue
Environmental Effects (continued)	Visual		0	0	0	0
			• Would not be above grade in any areas with sensitive viewers; would not affect protected views	• Would not be above grade in any areas with sensitive viewers; would not affect protected views	• Would not be above grade in any areas with sensitive viewers; would not affect protected views	• Would not be above grade in any areas with sensitive viewers; would not affect protected views
	Noise and vibration		Medium	Medium	Medium	Medium
			• Approximately 320 noise and vibration sensitive receivers within 350 feet of the alternative	• Approximately 320 noise and vibration sensitive receivers within 350 feet of the alternative	• Approximately 320 noise and vibration sensitive receivers within 350 feet of the alternative	• Approximately 320 noise and vibration sensitive receivers within 350 feet of the alternative
	Property acquisitions and displacements	Number of potentially affected properties	Medium	Medium	Medium	Medium
			• Between 10 and 20 parcels affected	• Between 10 and 20 parcels affected	• Between 10 and 20 parcels affected	• Between 10 and 20 parcels affected
	Property acquisitions and displacements (continued)	Number of potential residential unit displacements	Medium	Medium	Medium	Medium
			• Less than 50 potential residential unit displacements • Displacements would occur around the International District/Chinatown Station	• Less than 50 potential residential unit displacements • Displacements would occur around the International District/Chinatown Station	• Less than 50 potential residential unit displacements • Displacements would occur around the International District/Chinatown Station	• Less than 50 potential residential unit displacements • Displacements would occur around the International District/Chinatown Station
		Square feet of potential business displacements	High	Low	High	Low
			• Less than 200,000 square feet of potential business displacements • Displacements would occur primarily around the International District/Chinatown Station	• More than 325,000 square feet of potential business displacements • Displacements would occur primarily around the S Massachusetts Street portal and potentially around International District/Chinatown Station	• Less than 200,000 square feet of potential business displacements • Displacements would occur primarily around the International District/Chinatown Station	• More than 325,000 square feet of potential business displacements • Displacements would occur primarily in SODO and around International District/Chinatown Station
	Construction impacts		Low	High	Medium	Medium
			• Most disruptive construction of 5th Avenue S alignments and stations • Temporary noise, vibration and visual impacts on Chinatown/International District neighborhood • Construction of cut-and-cover tunnel and International District/Chinatown Station would affect traffic on 5th Avenue S and require periodic closures and detours; 5th Avenue S in a neighborhood minor arterial and carries about 8,500 vehicle a day and diversion of these vehicles could create traffic impacts on other roadways • Construction of elevated guideway and SODO and Stadium stations in E3 busway would periodically disrupt travel on existing light rail	• Less disruptive than the ST3 Representative Project because it would have a bored tunnel south of the International District/Chinatown Station • Temporary noise, vibration and visual impacts on Chinatown/International District neighborhood from construction of International District/Chinatown Station • Construction of cut-and-cover International District/Chinatown Station would affect traffic on 5th Avenue S and require periodic closures and detours; 5th Avenue S in a neighborhood minor arterial and carries about 8,500 vehicle a day and diversion of these vehicles could create traffic impacts on other roadways • Construction of at-grade guideway and SODO Station in E3 busway would periodically disrupt travel on existing light rail, but would be less than ST3 Representative Project because there would be no disruption of existing Stadium Station service because no construction is proposed in this area • Construction of grade-separated roadways at S Lander Street and S Holgate Street could affect traffic circulation in the SODO area and affect travel to/from adjacent neighborhoods	• Less disruptive than the ST3 Representative Project because it would have less cut-and-cover tunnel construction south of the International District/Chinatown Station • Construction of cut-and-cover International District/Chinatown Station would affect traffic on 5th Avenue S and require periodic closures and detours; 5th Avenue S in a neighborhood minor arterial and carries about 8,500 vehicle a day and diversion of these vehicles could create traffic impacts on other roadways • Temporary noise, vibration and visual impacts on Chinatown/International District neighborhood • Construction of SODO and Stadium stations in E3 busway would periodically disrupt travel on existing light rail • Construction of grade-separated roadways at S Lander Street and S Holgate Street could affect traffic circulation in the SODO area and affect travel to/from adjacent neighborhoods	• Construction of cut-and-cover tunnel and International District/Chinatown Station would affect traffic on 5th Avenue S and require periodic closures and detours; 5th Avenue S in a neighborhood minor arterial and carries about 8,500 vehicle a day and diversion of these vehicles could create traffic impacts on other roadways • Temporary noise, vibration and visual impacts on Chinatown/International District neighborhood • Construction of elevated guideway along Occidental Avenue and SODO and Stadium stations could affect traffic circulation in the SODO area and affect travel to/from adjacent neighborhoods

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative	Massachusetts Tunnel	Surface	Occidental
		Project	Portal	E-3	Avenue
Environmental Effects (continued)	Burden on minority and low-income populations	Medium • Construction of cut-and-cover tunnel and cut-and-cover International District/Chinatown Station would result in temporary noise, vibration, visual and transportation impacts for a community with minority and low-income populations greater than city average • Potential for business displacements for the Chinatown/International District, which has minority and low-income populations greater than city average • Stations would be located in areas of moderate (SODO, Stadium) to high (International District/Chinatown) displacement risk	Medium • Construction of cut-and-cover International District/Chinatown Station would result in temporary noise, vibration, visual and transportation impacts for a community with minority and low-income populations greater than city averages • Bored tunnel construction between Massachusetts Street and International District/Chinatown Station would be less than for cut-and-cover alternatives and would have less impact on this community • Potential for business displacements for the Chinatown/International District, which has minority and low-income populations greater than city average • Stations would be located in areas of moderate (SODO, Stadium) to high (International District/Chinatown) displacement risk	Medium • Construction of International District/Chinatown Station would result in temporary noise, vibration, visual and transportation impacts for a community with minority and low-income populations greater than city average • Potential for business displacements for the Chinatown/International District, which has minority and low-income populations greater than city average • Stations would be located in areas of moderate (SODO, Stadium) to high (International District/Chinatown) displacement risk	Medium • Construction of cut-and-cover tunnel and cut-and-cover International District/Chinatown Station would result in temporary noise, vibration, visual and transportation impacts for a community with minority and low-income populations greater than city average • Potential for business displacements for the Chinatown/International District, which has minority and low-income populations greater than city average • Stations would be located in areas of moderate (SODO, Stadium) to high (International District/Chinatown) displacement risk
Traffic Operations	Traffic circulation and access	Medium • Similar to existing conditions	High • Improvements in east/west mobility due to new grade separations at S Lander Street and S Holgate Street	Medium • Improvements in east/west mobility due to new grade separations at S Lander Street and S Holgate Street; these benefits are offset somewhat by the permanent closure of Royal Brougham Way S at the busway	Medium • Improvements in east/west mobility due to new grade separations at S Lander Street and S Holgate Street; these benefits are offset somewhat by the permanent closure of Royal Brougham Way S at the busway
	Transportation facilities	Low • Transportation facilities affected include WSDOT ramps, Ryerson Base, E3 busway and Seattle Boulevard S	High • Transportation facilities affected include S Lander Street, S Holgate Street grade separations and E3 busway	Medium • Transportation facilities affected include S Lander Street, S Holgate Street grade separations, Royal Brougham, Ryerson Base, E3 busway and Seattle Boulevard S	Medium • Transportation facilities affected include S Lander Street, S Holgate Street grade separations, Royal Brougham Way S, Ryerson Base, E3 busway and Seattle Boulevard S
Economic Effects	Freight movement and access on land and water	Medium • Use of BNSF spur track south of S Lander Street could affect rail freight operations • Does not introduce any new at-grade crossings • Bus relocation from E3 busway could affect freight routes • Cut-and-cover International District/Chinatown Station would affect freight traffic on 5th Avenue S	High • Use of BNSF spur track south of S Lander Street could affect rail freight operations • Full grade separation at S Holgate Street and S Lander Street would improve truck freight mobility by reducing at-grade crossings • No impacts to Royal Brougham Way S are expected • Bus relocation from E3 busway could affect freight routes • Cut-and-cover International District/Chinatown Station would affect freight traffic on 5th Avenue S	Medium • Use of BNSF spur track south of S Lander Street could affect rail freight operations • Full grade separation at S Holgate Street and S Lander Street would improve truck freight mobility by reducing at-grade crossings • Would close Royal Brougham Way S to vehicle traffic • Bus relocation from E3 busway could affect freight routes • Cut-and-cover International District/Chinatown Station would affect freight traffic on 5th Avenue S	Low • Columns could affect freight access to businesses located between 1st Avenue S and the BNSF Mainline that is provided by Occidental Avenue S • Temporary impacts to operations at BNSF Railway yard during construction of clear span bridge; no permanent impacts to freight rail • Cut-and-cover International District/Chinatown Station would affect freight traffic on 5th Avenue S

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	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative	Massachusetts Tunnel	Surface	Occidental
		Project	Portal	E-3	Avenue
Economic Effects (continued)	Business and commerce effects	Medium • Lower amount of business displacement compared to other SODO alternatives • Business displacements would mostly occur for the cut-and-cover tunnel north of Royal Brougham Way S • Temporary construction traffic impacts on freight movement on S Lander Street, S Holgate Street, Royal Brougham Way S, and Seattle Boulevard S for construction over/under these roadways	Medium • Second greatest amount of business displacement compared to other SODO alternatives • Business displacements would mostly occur around station areas and for the tunnel portal south of S Massachusetts Street • Temporary construction traffic impacts on freight movement on S Lander Street and S Holgate Street for grade separating these roadways	Medium • Lower amount of business displacement compared to other SODO alternatives • Business displacements would mostly occur for the cut and cover tunnel north of Royal Brougham Way S • Temporary construction traffic impacts on freight movement on S Lander Street and S Holgate Street for grade separating these roadways • Permanent closure of Royal Brougham Way S would change traffic circulation patterns, but is not expected to substantially affect freight movement	Low • Greatest amount of business displacement compared to other SODO alternatives • Business displacements would mostly occur on Occidental Avenue S and for the transition to the E3 busway • Impacts to freight access for businesses on Occidental Avenue S

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		4th Avenue Cut-and-Cover	4th Avenue Bored	5th Avenue Bored	
		Tunnel/Station	Tunnel/Mined Station	Tunnel/Mined Station	
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.					
Reliable Service	Potential service interruptions and recoverability	Low • Continue to have at-grade crossings for existing Link light rail at Royal Brougham Way S, S Lander Street and S Holgate Street	Low • Continue to have at-grade crossings for existing Link light rail at Royal Brougham Way S, S Lander Street and S Holgate Street	Medium • Proposed roadway overpasses for grade separation at S Lander Street and S Holgate Street; existing Link light rail would continue to have an at-grade crossing at Royal Brougham Way S	
Travel Times	LRT travel times	3 to 4 • Estimated 3 to 4 minute travel time measured from SODO Station to International District/Chinatown Station • All alternatives have similar travel times	3 to 4 • Estimated 3 to 4 minute travel time measured from SODO Station to International District/Chinatown Station • All alternatives have similar travel times	3 to 4 • Estimated 3 to 4 minute travel time measured from SODO Station to International District/Chinatown Station • All alternatives have similar travel times	
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.					
Regional Connectivity	LRT network integration	Medium • Facilitates spine segmentation	Medium • Facilitates spine segmentation	Medium • Facilitates spine segmentation	
Transit Capacity	Passenger carrying capacity in downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	
Projected Transit Demand	Ridership potential	35,300 • Approximately 35,300 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	35,300 • Approximately 35,300 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	35,900 • Approximately 35,900 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.					
Regional Centers Served	Station proximity to PSRC-designated regional growth centers	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	
	Station proximity to PSRC-designated manufacturing/industrial centers	1 • SODO and Stadium stations located in Duwamish manufacturing/industrial center	1 • SODO and Stadium stations located in Duwamish manufacturing/industrial center	1 • SODO and Stadium stations located in Duwamish manufacturing/industrial center	
Sound Transit Long-Range Plan	Accommodates future LRT extension beyond ST3	Medium • Consistent with Sound Transit Long-Range Plan	Medium • Consistent with Sound Transit Long-Range Plan	Medium • Consistent with Sound Transit Long-Range Plan	

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		4th Avenue Cut-and-Cover Tunnel/Station	4th Avenue Bored Tunnel/Mined Station	5th Avenue Bored Tunnel/Mined Station	
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.					
ST3 Consistency	Mode, route and general station locations per ST3	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	
	Potential ST3 implementation schedule effects	Low • 4th Avenue viaduct rebuild could increase implementation schedule	Low • Partial 4th Avenue viaduct rebuild and very deep mined station could increase implementation schedule	Medium • Very deep mined station could increase implementation schedule	
	Potential ST3 operating plan effects	High • Facilitates special trackwork and provides reliable system operations	Low • Does not facilitate special trackwork or provide reliable system operations	Medium • May not facilitate all desired special trackwork for track interconnection but more opportunities than ST3 Representative Project	
Technical Feasibility	Engineering constraints	Low • Would require 4th Avenue S viaduct and retaining wall demolition and reconstruction S Washington Street to Seattle Boulevard S, construction on high volume arterial and adjacent to BNSF active trackway • Three tunnels in close proximity at S Washington Street; Ballard line cut-and-cover tunnel just east of BNSF tunnel portal • Minimal clearance over existing Downtown Seattle Transit Tunnel (DSTT); likely service disruption to existing LRT operating in DSTT • Yesler Bridge and King County Administration building likely to be impacted • Royal Brougham Way S tunnel crossing under roadway, under active LRT mainline • WSDOT ramp structure modifications required • E3 busway from Stadium Station to S Forest Street similar to ST3 Representative Project	Low • Would require 4th Avenue S viaduct demolition and reconstruction anticipated for mined station cavern • 4th Avenue S likely to have long-term closure • Vertical alignment to go below 4th Avenue S constraints results in deeper Midtown and International District/Chinatown stations • Profile grades are steep and less desirable • TBM Portal assumed in King County Ryerson bus base, property impacts likely from S Massachusetts Street to properties north of Royal Brougham Way S • E3 busway from Stadium Station to S Forest Street similar to ST3 Representative Project	Medium • Bored tunnel and mined station, with station access shaft off-street likely minimizes impacts to 5th Avenue S • Vertical alignment to go below 5th Avenue S results in deeper Midtown and International District/Chinatown stations • Profile grades are steep and less desirable • Proximity issue to existing foundations of WSDOT/East Link structures • Minimizes elevated guideway and associated ground improvements • Design of bored tunnel and portal in poor soils and high water table • Reduced impact to King County Ryerson Base	
	Constructability issues	Low • Constructability issues related to cut-and-cover tunnel 4th Avenue; demolition and reconstruction of key facilities and work in close proximity to existing infrastructure • Light rail lines at different elevations for most of E3 busway would create limited area for track construction phasing • South tunnel portal likely to require WSDOT structure modifications • Cut-and-cover tunnel constrained work zone, headroom issues, poor soils and high water table • Cut-and-cover tunnel portal and retained cut may need temporary track and temporary closure of Stadium Station	Low • Constructability issues related to bored tunnel and mined station on 4th Avenue S; demolition and reconstruction of 4th Avenue viaduct and work in close proximity existing infrastructure • Shallow ground improvement likely at specific sections with liquefiable soils in tunnel section • Light rail lines at different elevations for most of E3 busway likely resulting in increased service disruption	Medium • Bored tunnel and mined station would be below 5th Avenue S wall pile foundation • Shallow ground improvement likely at specific sections with liquefiable soils • Station access shaft would likely require ground treatment • Bored tunnel portal, with largest work zone for tunnel portal • Light rail lines at different elevations for most of E3 busway likely resulting in increased service disruption • Tunnel proximity to ramp foundations may require ground improvements • Bored tunnel and portal through poor soils and high water table	

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 2 of 2)		
			4th Avenue Cut-and-Cover	4th Avenue Bored	5th Avenue Bored
			Tunnel/Station	Tunnel/Mined Station	Tunnel/Mined Station
Technical Feasibility (continued)	Operational constraints		Medium	Low	Medium
			• Generally meets operational goals and pocket tracks • At-grade roadway crossings on Ballard to Tacoma Line at S Holgate Street and S Lander Street, and on Everett to West Seattle Line at Royal Brougham Way S • Provides connection between West Seattle and Ballard lines; some movements may require reversing directions	• Pocket tracks are provided similar to ST3 Representative Project • Based on current layout of West Seattle and Ballard Link Extensions, connection would only be accommodated through the OMF connection • Adding a crossover at the south end of International District/Chinatown Station would be difficult given the track vertical geometry and additional viaduct reconstruction	• Meets operational goals and pocket tracks • At-grade roadway crossings on Everett to West Seattle Line at Royal Brougham Way S (existing) • Provides connection between West Seattle and Ballard lines
Financial Sustainability	Conceptual capital cost comparison		$600 million increase	$500 million increase	Similar
			• Approximately $600 million more than the ST3 Representative Project	• Approximately $500 million more than the ST3 Representative Project	• Similar to the ST3 Representative Project
	Operating cost impacts		Medium	Medium	Medium
			• Elevated guideway could result in higher O&M costs compared with at-grade alignment	• Elevated guideway could result in higher O&M costs compared with at-grade alignment	• Longer tunnel could result in higher O&M costs compared with at-grade alignment
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.					
Historically Underserved Populations	Opportunities for low-income and minority populations	Assessment of improved access to opportunities	High	High	High
			• International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90%/45%) • International District/Chinatown Station would be located in area with an average annual household income below 2 times the federal poverty level for a 2-person household • Access to approximately 40 activity nodes in West Seattle and 25 to 35 activity nodes in Interbay/Ballard would be improved for the population in this area	• International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90%/45%) • International District/Chinatown Station would be located in area with an average annual household income below 2 times the federal poverty level for a 2-person household • Access to approximately 40 activity nodes in West Seattle and 25 to 35 activity nodes in Interbay/Ballard would be improved for the population in this area	• International District/Chinatown Station would be located in area with higher than average minority and LEP population (approximately 90%/45%) • International District/Chinatown Station would be located in area with an average annual household income below 2 times the federal poverty level for a 2-person household • Access to approximately 40 activity nodes in West Seattle and 25 to 35 activity nodes in Interbay/Ballard would be improved for the population in this area
		Percent of rent-restricted or subsidized rental units	75%	75%	80%
			• 75% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 75% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 80% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		4th Avenue Cut-and-Cover	4th Avenue Bored	5th Avenue Bored	
		Tunnel/Station	Tunnel/Mined Station	Tunnel/Mined Station	
Historically Underserved Populations (continued)	Low-income population	57% / 49%	57% / 49%	59% / 49%	
		• City average is 24% • Low-income population within 10-minute walkshed is 33% above city average • Low-income population within 15-minute rideshed is 25% above city average • Average household income for walksheds is $47,642, which is less than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.7, less than city average of 2.1	• City average is 24% • Low-income population within 10-minute walkshed is 35% above city average • Low-income population within 15-minute rideshed is 25% above city average • Average household income for walksheds is $47,642, which is less than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.7, less than city average of 2.1	• City average is 24% • Low-income population within 10-minute walkshed is 35% above city average • Low-income population within 15-minute rideshed is 25% above city average • Average household income for walksheds is $47,642, which is less than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.7, less than city average of 2.1	
	Minority population	63% / 54%	63% / 54%	65% / 54%	
		• City average is 34% • Minority population within 10-minute walkshed is 29% above city average • Minority population within 15-minute rideshed is 20% above city average	• City average is 34% • Minority population within 10-minute walkshed is 29% above city average • Minority population within 15-minute rideshed is 20% above city average	• City average is 34% • Minority population within 10-minute walkshed is 31% above city average • Minority population within 15-minute rideshed is 20% above city average	
	Youth population (under 18)	6% / 7%	6% / 7%	7% / 7%	
		• City average is 15% • Youth population within 10-minute walkshed is 9% below city average • Youth population within 15-minute rideshed is 8% below city average	• City average is 15% • Youth population within 10-minute walkshed is 9% below city average • Youth population within 15-minute rideshed is 8% below city average	• City average is 15% • Youth population within 10-minute walkshed is 8% below city average • Youth population within 15-minute rideshed is 8% below city average	
	Elderly population (65 and over)	20% / 19%	20% / 19%	20% / 19%	
		• City average is 12% • Elderly population within 10-minute walkshed is 8% above city average • Elderly population within 15-minute rideshed is 7% above city average	• City average is 12% • Elderly population within 10-minute walkshed is 8% above city average • Elderly population within 15-minute rideshed is 7% above city average	• City average is 12% • Elderly population within 10-minute walkshed is 8% above city average • Elderly population within 15-minute rideshed is 7% above city average	
	Limited English Proficiency (LEP) population	28% / 19%	28% / 19%	30% / 19%	
		• City average is 8% • LEP population within 10-minute walkshed is 20% above city average • LEP population within 15-minute rideshed is 11% above city average • Predominant language spoken by LEP populations is Chinese	• City average is 8% • LEP population within 10-minute walkshed is 20% above city average • LEP population within 15-minute rideshed is 11% above city average • Predominant language spoken by LEP populations is Chinese	• City average is 8% • LEP population within 10-minute walkshed is 22% above city average • LEP population within 15-minute rideshed is 11% above city average • Predominant language spoken by LEP populations is Chinese	
	Disabled population	25% / 19%	25% / 19%	24% / 19%	
		• City average is 9% • Disabled population within 10-minute walkshed is 16% above city average • Disabled population within 15-minute rideshed is 10% above city average	• City average is 9% • Disabled population within 10-minute walkshed is 16% above city average • Disabled population within 15-minute rideshed is 10% above city average	• City average is 9% • Disabled population within 10-minute walkshed is 15% above city average • Disabled population within 15-minute rideshed is 10% above city average	

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		4th Avenue Cut-and-Cover	4th Avenue Bored	5th Avenue Bored	
		Tunnel/Station	Tunnel/Mined Station	Tunnel/Mined Station	
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.					
Station Area Land Use Plan Consistency	Compatibility with Seattle designated Urban Centers and Villages	41%	41%	41%	
		• International District/Chinatown Station walkshed includes primarily the Pioneer Square and Chinatown-International District Urban Center Villages; 41% of combined station walkshed within urban center and villages • The combined walkshed for the three stations is small (582 acres) due to the long block sizes, therefore skewing the percentage	• International District/Chinatown Station walkshed includes primarily the Pioneer Square and Chinatown-International District Urban Center Villages; 41% of combined station walkshed within urban center and villages • The combined walkshed for the three stations is small (582 acres) due to the long block sizes, therefore skewing the percentage	• International District/Chinatown Station walkshed includes primarily the Pioneer Square and Chinatown-International District Urban Center Villages; 41% of combined station walkshed within urban center and villages • The combined walkshed for the three stations is small (579 acres) due to the long block sizes, therefore skewing the percentage	
	Station locations consistent with current local land use plans	Medium	Medium	Medium	
		• Strong local land use plans in the Pioneer Square and International District/Chinatown Station areas, including recent rezoning around historic Chinatown • Stadium and SODO stations are within the Manufacturing and Industrial areas with some recent planning around uses in industrial lands	• Strong local land use plans in the Pioneer Square and International District/Chinatown Station areas, including recent rezoning around historic Chinatown • Stadium and SODO stations are within the Manufacturing and Industrial areas with some recent planning around uses in industrial lands	• Strong local land use plans in the International District/Chinatown Station area, including recent rezoning around historic Chinatown • Stadium and SODO stations are within the Manufacturing and Industrial areas with some recent planning around uses in industrial lands	
	Activity nodes served	54	54	57	
		• 54 activity nodes served, including Seattle City Hall, food banks, International District/Chinatown Community Center, Century Link Field and Safeco Field	• 54 activity nodes served, including Seattle City Hall, food banks, International District/Chinatown Community Center, Century Link Field and Safeco Field	• 57 activity nodes served, including Seattle City Hall, food banks, International District/Chinatown Community Center, Century Link Field and Safeco Field	
Modal Integration	Passenger transfers	Medium	Low	Low	
		• Most station locations provide space for adjacent bus and drop-off/pick-up connections	• Most station locations provide space for adjacent bus and drop-off/pick-up connections • Deeper mined station not as convenient for ease of access and passenger transfers in comparison to shallower cut-and-cover stations	• Station locations generally have space for drop-off/pick-up activity and adjacent bus zones • Proposed S Lander Street grade separation limits opportunities to site bus zones and drop-off/pick-up activity adjacent to SODO Station • Deeper mined station not as convenient for ease of access and passenger transfers in comparison to shallower cut-and-cover stations	
	Bus/rail and rail/rail integration	Medium	Medium	Medium	
		• Good bus access at proposed stations; 100% of transit routes less than one block walk of stations • Bus zones likely on adjacent cross streets to existing SODO Station	• Good bus access at proposed stations; 100% of transit routes less than one block walk of stations • Bus zones likely on adjacent cross streets to existing SODO Station	• Average to good transportation integration opportunities; 68% of transit routes less than one block walk of stations • Limited opportunities to site bus zones adjacent to SODO Station with S Lander Street grade separation • Good transfer opportunities at International District/Chinatown Station	

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		4th Avenue Cut-and-Cover	4th Avenue Bored	5th Avenue Bored	
		Tunnel/Station	Tunnel/Mined Station	Tunnel/Mined Station	
Modal Integration (continued)	Bicycle accessibility	21%	21%	21%	
		• 21% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 3.5 square miles • Similar bike facilities as other segment alternatives	• 21% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 3.5 square miles • Similar bike facilities as other segment alternatives	• 21% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 3.5 square miles • Similar bike facilities as other segment alternatives	
	Pedestrian and persons with limited mobility accessibility	Medium	Medium	Medium	
		• 215 intersections within combined walksheds • 71% of sidewalk/trail miles to total roadway miles within combined walksheds • The pedestrian environment includes major roadways, long north-south blocks, manufacturing/industrial parcels with long curb cuts and truck traffic, streets without sidewalks, and BNSF Railway tracks • SODO and Stadium stations located within the Greater Duwamish Manufacturing/Industrial Center	• 215 intersections within combined walksheds • 71% of sidewalk/trail miles to total roadway miles within combined walksheds • The pedestrian environment includes major roadways, long north-south blocks, manufacturing/industrial parcels with long curb cuts and truck traffic, streets without sidewalks, and BNSF Railway tracks • SODO and Stadium stations located within the Greater Duwamish Manufacturing/Industrial Center	• 203 intersections within combined walksheds • 69% of sidewalk/trail miles to total roadway miles within combined walksheds • The pedestrian environment includes major roadways, long north-south blocks, manufacturing/industrial parcels with long curb cuts and truck traffic, streets without sidewalks, and BNSF Railway tracks • SODO and Stadium stations located within the Greater Duwamish Manufacturing/Industrial Center	
Station Area Development Opportunities	Development potential	13%	13%	14%	
		• Little difference among alternatives since station locations are similar • 13% of parcels with redevelopment potential • Slight decrease compared to other alternatives due to location of International District/Chinatown Station	• Little difference among alternatives since station locations are similar • 13% of parcels with redevelopment potential	• Little difference among alternatives since station locations are similar • 14% of parcels with redevelopment potential • Slight decrease compared to other alternatives due to location of International District/Chinatown Station	
	Equitable development opportunities	Medium	Low	Medium	
		• Some opportunities for equitable development south of Airport Way S between International District/Chinatown Station and Stadium Station west of I-90 bus lane • Property acquisitions along 4th Avenue S could create potential equitable development opportunities	• Greater opportunities south of Airport Way S between International District/Chinatown Station and Stadium Station west of I-90 bus lane	• Greater opportunities south of Airport Way S between International District/Chinatown Station and Stadium Station east of I-90 bus lane • Property acquisitions along 6th Avenue S could create potential equitable development opportunities	
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.					
Environmental Effects	National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle City Landmarks	5	2	3	
		• 5 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	• 2 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	• 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project • Located in Chinatown/International District Historic District and Pioneer Square Historic District, both are also Seattle Landmark Preservation Districts	

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SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		4th Avenue Cut-and-Cover	4th Avenue Bored	5th Avenue Bored	
		Tunnel/Station	Tunnel/Mined Station	Tunnel/Mined Station	
Environmental Effects (continued)	Potential archaeological resources	Low	Low	Low	
		• 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites	• 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites	• 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites	
	Parks and recreational resources	0	0	0	
		• No parks would be permanently impacted	• No parks would be permanently impacted	• No parks would be permanently impacted	
	Water resources	0	0	0	
		• No potential for permanent in-water impacts	• No potential for permanent in-water impacts	• No potential for permanent in-water impacts	
	Fish and wildlife habitat	0	0	0	
		• No permanent fish and wildlife habitat impacts	• No permanent fish and wildlife habitat impacts	• No permanent fish and wildlife habitat impacts	
	Hazardous materials	5	9	9	
		• Approximately 5 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	• Approximately 9 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	• Approximately 9 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	
	Visual	0	0	0	
		• Would not be above grade in any areas with sensitive viewers; would not affect protected views	• Would not be above grade in any areas with sensitive viewers; would not affect protected views	• Would not be above grade in any areas with sensitive viewers; would not affect protected views	
	Noise and vibration	Medium	Medium	Medium	
		• Approximately 320 noise and vibration sensitive receivers within 350 feet of the alternative	• Approximately 320 noise and vibration sensitive receivers within 350 feet of the alternative	• Approximately 320 noise and vibration sensitive receivers within 350 feet of the alternative	
	Property acquisitions and displacements – Number of potentially affected properties	Medium	Medium	Medium	
		• Between 10 and 20 parcels affected	• Between 10 and 20 parcels affected	• Between 10 and 20 parcels affected	

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

The Level 2 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 2 of 2)			
			4th Avenue Cut-and-Cover	4th Avenue Bored	5th Avenue Bored	
			Tunnel/Station	Tunnel/Mined Station	Tunnel/Mined Station	
Environmental Effects (continued)	Property acquisitions and displacements (continued)	Number of potential residential unit displacements	Medium	Medium	Medium	
			• Less than 50 potential residential unit displacements • Displacements would occur around the International District/Chinatown Station	• Less than 50 potential residential unit displacements • Displacements would occur around the International District/Chinatown Station	• Less than 50 potential residential unit displacements • Displacements would occur around the International District/Chinatown Station	
		Square feet of potential business displacements	Low	High	Low	
			• More than 325,000 square feet of potential business displacements • Displacements would occur primarily in the Stadium area and Central Business District	• Less than 200,000 square feet of potential business displacements • Displacements would occur primarily in Stadium area	• More than 325,000 square feet of potential business displacements • Displacements would occur primarily around the S Massachusetts Street portal and potentially around International District/Chinatown Station	
	Construction impacts		Low	Low	High	
			• Cut-and-cover tunnel and station construction would affect traffic on 4th Avenue S and require periodic closures and detours; 4th Avenue S is a Downtown Principal Arterial and a Major Freight Route that carries about 33,000 vehicles a day and diversion of these vehicles could create traffic impacts on other roadways • Temporary noise, vibration and visual impacts on Chinatown/International District neighborhood; reduced compared to alternatives on 5th Avenue S • Construction of elevated guideway and SODO and Stadium stations in E3 busway would periodically disrupt travel on existing light rail	• Most disruptive construction of 4th Avenue S alignments and stations • Construction of mined tunnel and International District/Chinatown Station would require full closure of 4th Avenue S, which is a Downtown Principal Arterial and a Major Freight Route that carries about 33,000 vehicles a day; diversion of these vehicles could create traffic impacts on other roadways • Temporary noise, vibration and visual impacts on Chinatown/International District neighborhood; reduced compared to alternatives on 5th Avenue S • Construction of elevated guideway and SODO and Stadium stations in E3 busway would periodically disrupt travel on existing light rail	• Least disruptive construction of 5th Avenue S alignments and stations • Construction of elevated guideway and SODO and Stadium stations in E3 busway would periodically disrupt travel on existing light rail • Construction of mined International District/Chinatown Station would avoid impacts on traffic on 5th Avenue S • Temporary noise, vibration and visual impacts would occur for adjacent residences	
	Burden on minority and low-income populations		Low	Low	High	
			• Construction of cut-and-cover tunnel and cut-and-cover International District/Chinatown Station would result in temporary noise, vibration, visual and transportation impacts for a community with minority and low-income populations greater than city average • Partial closure of 4th Avenue S during construction has potential for cut-through traffic in Chinatown/International District • Potential for business displacements for the Chinatown/International District, which has minority and low-income populations greater than city average • Stations would be located in areas of moderate (SODO, Stadium) to high (International District/Chinatown) displacement risk • Would displace multiple social services, including a homeless shelter	• Construction of International District/Chinatown Station would result in temporary noise, vibration, visual and transportation impacts for a community with minority and low-income populations greater than city average • Full closure of 4th Avenue S during construction has greatest potential for cut-through traffic in Chinatown/International District and would cause greater impacts than stations on 5th Avenue S • Potential for business displacements for the Chinatown/International District, which has minority and low-income populations greater than city average • Stations would be located in areas of moderate (SODO, Stadium) to high (International District/Chinatown) displacement risk	• Construction of International District/Chinatown Station would result in temporary noise, vibration, visual and transportation impacts for a community with minority and low-income populations greater than city average; impacts would be less than alternatives with cut-and-cover International District/Chinatown Station • Potential for business displacements for the Chinatown/International District, which has minority and low-income populations greater than city average • Stations would be located in areas of moderate (SODO, Stadium) to high (Chinatown/International District) displacement risk	

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

SODO and Chinatown/International District Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		4th Avenue Cut-and-Cover	4th Avenue Bored	5th Avenue Bored	
		Tunnel/Station	Tunnel/Mined Station	Tunnel/Mined Station	
Traffic Operations	Traffic circulation and access	Low	Medium	High	
		• Reduced capacity on 4th Avenue S to facilitate station access would degrade traffic operations	• Similar to existing conditions	• Improvements in east/west mobility due to new grade separations at S Lander Street and S Holgate Street	
	Transportation facilities	Low	Low	High	
		• Transportation facilities affected include 4th Avenue S, Royal Brougham Way S, Ryerson Base, E3 busway and Seattle Boulevard S	• Transportation facilities affected include 4th Avenue S, Ryerson Base, E3 busway and Seattle Boulevard S	• Transportation facilities affected include S Lander Street, S Holgate Street grade separations and E3 busway	
Economic Effects	Freight movement and access on land and water	Low	Low	High	
		• Use of BNSF spur track south of S Lander Street could affect rail freight operations • Does not introduce any new at-grade crossings • Bus relocation from E3 busway could affect freight routes • Cut-and-cover International District/Chinatown Station would affect freight traffic on 4th Avenue S, a designated Major Freight Route; some traffic could be maintained during construction with increased congestion expected • Could affect BNSF operations during tunnel and station construction due to close proximity to tracks	•Use of BNSF spur track south of S Lander Street could affect rail freight operations • Does not introduce any new at-grade crossings • Bus relocation from E3 busway could affect freight routes • Construction of International District/Chinatown Station would affect freight traffic on 4th Avenue S, a designated Major Freight Route; full closure of 4th Avenue S during construction would require detours with increased congestion expected on detour routes • Could affect BNSF operations during station construction due to close proximity to tracks	• Use of BNSF spur track south of S Lander Street could affect rail freight operations • Full grade separation at S Holgate Street and S Lander Street would reduce at-grade crossings for freight • No impacts to Royal Brougham Way S • Bus relocation from E3 busway could affect freight routes • Mined International District/Chinatown Station would avoid freight impacts on 5th Avenue S	
	Business and commerce effects	Medium	Medium	High	
		• Lower amount of business displacement compared to other SODO alternatives • Business displacements would mostly occur for the cut-and-cover tunnel on 4th Avenue S • Impacts to freight movement during construction due to partial closure of 4th Avenue S, a designated Major Freight Route	• Lower amount of business displacement compared to other SODO alternatives • Business displacements would mostly occur for tunnel portal south of Royal Brougham Way S • Greatest impact of SODO alternatives on freight movement during construction due to full closure of 4th Avenue S, a designated Major Freight Route	• Moderate amount of business displacement compared to other SODO alternatives • Business displacements would mostly occur for tunnel portal south of Royal Brougham Way S • Least disruptive to freight movement during construction	

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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APPENDIX D

Downtown Segment
Level 2 Evaluation Matrices

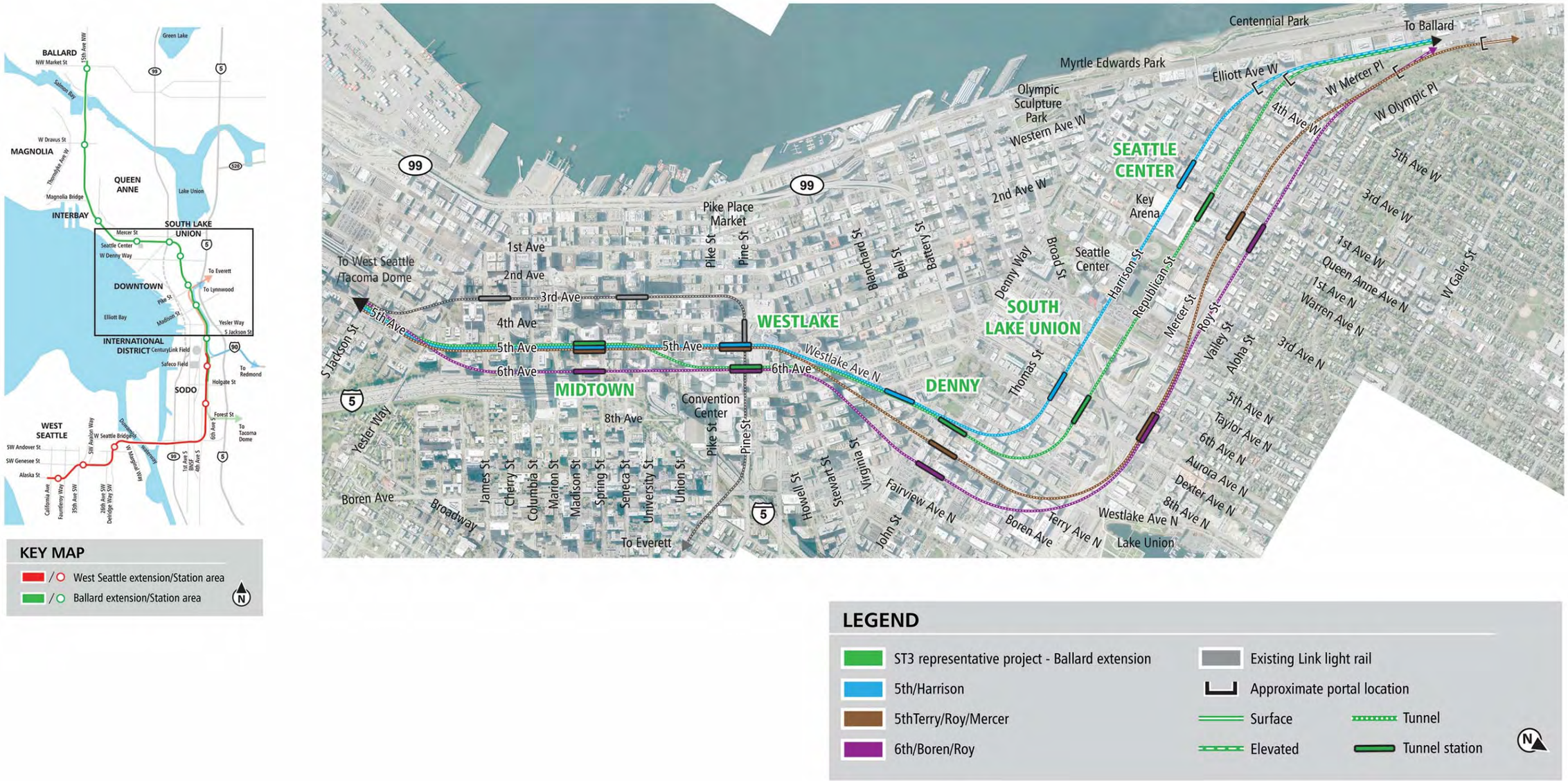

Figure D-1 Downtown Segment—Level 2 Alternatives

Level 2 Alternatives Evaluation Summary

Downtown Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.					
Potential service interruptions and recoverability	Likelihood of service interruptions during peak and off-peak travel periods (High=low likelihood)	High	High	High	High
LRT travel times	Estimated travel times within segments based on alignment characteristics (minutes)	8 to 9	8 to 9	8 to 9	8 to 9
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.					
LRT network integration	Ability to accommodate spine segmentation, LRT system connectivity, and operational flexibility	Medium	Medium	Medium	Medium
Passenger carrying capacity in downtown	Combined passenger carrying capacity of downtown transit tunnels	Medium	Medium	Medium	Medium
Ridership potential	Future Puget Sound Regional Council (PSRC) forecasted 2040 total population and employment within 10-minute walkshed of WSBLE Project stations	167,800	163,300	176,700	176,700
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.					
Station proximity to PSRC-designated regional growth centers	Number of PSRC-designated regional growth centers served by stations	3	3	3	3
Station proximity to PSRC-designated manufacturing/industrial centers	Number of PSRC-designated manufacturing/industrial centers served by stations	N/A	N/A	N/A	N/A
Accommodates future LRT extension beyond ST3	Expansion potential of future LRT extensions identified in Sound Transit Long-Range Plan	Medium	Medium	Medium	Medium
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.					
Mode, route and general station locations per ST3	Consistency of mode, route and general station locations per ST3	High	High	High	High
Potential ST3 implementation schedule effects	Constructability, environmental or other issues/challenges that may cause WSBLE Project schedule risks	High	High	High	High
Potential ST3 operating plan effects	Integration of WSBLE Project into existing LRT spine and overall system (i.e., special trackwork, movable bridge implications, etc.)	High	High	High	High
Engineering constraints	Compliance with Sound Transit Design Criteria Manual, design criteria from agencies with jurisdiction and federal regulations, and engineering obstacles associated with major infrastructure constraints	Low	Low	Medium	Low
Constructability issues	Constructability issues based on potential conflicts and technical challenges	Low	Low	Low	Low
Operational constraints	Assessment of operational constraints (e.g., access to maintenance facility, vertical grade, horizonal curvature, movable bridge, etc.)	Medium	Medium	High	Medium
Conceptual capital cost comparison	Conceptual capital cost comparison to ST3 Representative Project based on conceptual design quantities and current Sound Transit unit pricing (2017$)	--	$200 million increase	Similar	$200 million increase
Operating cost impacts	Assessment of operations and maintenance (O&M) cost impacts	Medium	Medium	Medium	Medium

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

Downtown Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.					
Opportunities for low-income and minority populations	Overlay of activity nodes data with minority, LEP, and low-income populations	Medium	Medium	Medium	Medium
	Percent of rent-restricted or subsidized rental units within 10-minute walkshed	27%	29%	24%	26%
Low-income population	Low-income population percentage (i.e., households below 2 times the federal poverty level) within 10-minute walkshed and 15-minute ride on connecting high frequency transit	28% / 30%	29% / 30%	28% / 30%	28% / 30%
Minority population	Minority population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	36% / 36%	36% / 36%	34% / 36%	35% / 36%
Youth population (under 18)	Youth population (under 18) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	4% / 4%	4% / 4%	4% / 4%	4% / 4%
Elderly population (65 and over)	Elderly population (65 and over) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	14% / 13%	14% / 13%	15% / 13%	14% / 13%
Limited English Proficiency (LEP) population	LEP population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit (Predominant languages spoken by LEP populations will be noted)	5% / 5%	5% / 5%	5% / 5%	5% / 5%
Disabled population	Disabled population (includes those with hearing, vision, or ambulatory disability) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	12% / 12%	12% / 12%	12% / 12%	12% / 12%
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.					
Compatibility with Seattle designated Urban Centers and Villages	Percent of 10-minute station walkshed land area located within Seattle-designated Urban Centers and/or Villages	95%	96%	91%	92%
Station locations consistent with current local land use plans	Compatibility and consistency of station locations with current local land use plans	High	High	High	High
Activity nodes served	Number of activity nodes within 10-minute walkshed of stations	171	171	169	168
Passenger transfers	Ease of passenger transfers for transit customers between motorized modes	Low	Medium	Medium	Medium
Bus/rail and rail/rail integration	Assessment of peak-hour rail and bus trips immediately adjacent to stations	Low	Medium	Low	Medium
Bicycle accessibility	Percent of bicycle facility miles to roadway miles within 10-minute bikeshed of stations	23%	24%	23%	23%
Pedestrian and persons with limited mobility accessibility	Assessment of number of intersections, percent of sidewalk/trail miles to total roadway miles, and impediments to pedestrian and American with Disabilities Act (ADA) access within 10-minute walkshed of stations	High	High	High	High
Development potential	Development potential within 10-minute walkshed of stations (5-minute walkshed in downtown)	12%	12%	12%	12%

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

Downtown Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Equitable development opportunities	Assessment of unique opportunities for equitable development enabled by station location and/or conceptual configuration	Low	High	Medium	Medium
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.					
National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle City Landmarks	Number of NRHP listed or eligible properties potentially affected	31	35	23	34
Potential archaeological resources	Assessment of the percent of alternative length within Very High Risk or High Risk probability areas using Department of Archaeology and Historic Preservation predictive model	Low	Low	Low	Low
Parks and recreational resources	Estimated acres of potential impacts to parks	0	0	1.1	0
Water resources	Estimated acres of potential permanent in-water impacts	0	0	0	0
Fish and wildlife habitat	Estimated acres of potential permanent fish and wildlife habitat impacts	0	0	1.1	0
Hazardous materials	Number of contaminated sites of high concern potentially impacted, including Superfund sites	18	12	23	18
Visual	Miles of alignment adjacent to visually sensitive viewers, assessment of scale of elevated guideway in visually sensitive areas, and potential impacts to SEPA Scenic Routes	0	0	< 0.1	0
Noise and vibration	Assessment of the number of noise and vibration sensitive receivers potentially affected	High	Medium	Medium	High
Property acquisitions and displacements	Number of properties potentially affected	Medium	Medium	Medium	Medium
	Number of potential residential unit displacements	Medium	High	Low	Low
	Square feet of potential business displacements	High	Low	High	High
Construction impacts	Assessment of temporary construction impacts to community, including potential for transportation, access, noise, vibration, and visual effects that could disrupt the community (e.g., existing residents, businesses, social service providers), and relative duration of construction and impacts to high volume traffic areas	Medium	Low	Medium	High
Burden on minority and low-income populations	Potential acquisitions and displacements and visual, noise and construction impacts in areas with minority and low-income populations greater than the city average and overlay of displacement risk	Medium	Medium	Medium	Medium
Traffic circulation and access	Effects on traffic and transit (i.e., bus and streetcar) operations	High	High	High	High
Transportation facilities	Effects on existing transportation facilities, including bicycle lanes, sidewalks, traffic interchanges and other transportation infrastructure as warranted, and compatibility with planned facilities	Medium	Low	High	Medium

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

Downtown Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Freight movement and access on land and water	Effects on existing and future freight mobility and future freight capacity expansion opportunities, including both on land and water	High	High	High	High
Business and commerce effects	Effects on businesses, as well as commercial and industrial areas, including potential impacts during construction and operations from changes in access, travel patterns and displacements	High	Low	Medium	Medium

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native
3. Property Acquisitions and Displacements:
   Number of properties potentially affected: Medium = Between 10 and 20 parcels, due to small variation in impacts all alternatives in this segment were rated equally
   Number of potential residential displacements: High = Less than 40 units; Medium = Between 40 and 90 units; Low = More than 90 units
   Area of potential business displacements: High = Less than 125,000 square feet; Medium = Between 125,000 and 200,000 square feet; Low = More than 200,000 square feet

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

The Level 2 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 2 Alternatives Evaluation

Downtown Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.					
Reliable Service	Potential service interruptions and recoverability	High • Fully grade separated	High • Fully grade separated	High • Fully grade separated	High • Fully grade separated
Travel Times	LRT travel times	8 to 9 • Estimated 8 to 9 minute travel time measured from International District/Chinatown Station to Smith Cove Station • All alternatives have similar travel times	8 to 9 • Estimated 8 to 9 minute travel time measured from International District/Chinatown Station to Smith Cove Station • All alternatives have similar travel times	8 to 9 • Estimated 8 to 9 minute travel time measured from International District/Chinatown Station to Smith Cove Station • All alternatives have similar travel times	8 to 9 • Estimated 8 to 9 minute travel time measured from International District/Chinatown Station to Smith Cove Station • All alternatives have similar travel times
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.					
Regional Connectivity	LRT network integration	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity
Transit Capacity	Passenger carrying capacity in downtown	Medium • Includes new light rail tunnel through downtown	Medium • Includes new light rail tunnel through downtown	Medium • Includes new light rail tunnel through downtown	Medium • Includes new light rail tunnel through downtown
Projected Transit Demand	Ridership potential	167,800 • Approximately 167,800 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	163,300 • Approximately 163,300 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	176,700 • Approximately 176,700 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	176,700 • Approximately 176,700 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.					
Regional Centers Served	Station proximity to PSRC-designated regional growth centers	3 • 3 out of 3 regional growth centers served (Seattle Central Business District [CBD], South Lake Union, Uptown Queen Anne)	3 • 3 out of 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown Queen Anne)	3 • 3 out of 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown Queen Anne)	3 • 3 out of 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown Queen Anne)
	Station proximity to PSRC-designated manufacturing/industrial centers	N/A • No regional manufacturing/industrial centers in segment	N/A • No regional manufacturing/industrial centers in segment	N/A • No regional manufacturing/industrial centers in segment	N/A • No regional manufacturing/industrial centers in segment
Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Medium • Consistent with Sound Transit Long-Range Plan	Medium • Consistent with Sound Transit Long-Range Plan	Medium • Consistent with Sound Transit Long-Range Plan	Medium • Consistent with Sound Transit Long-Range Plan

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Downtown Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.					
ST3 Consistency	Mode, route and general station locations per ST3	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan
ST3 Consistency	Potential ST3 implementation schedule effects	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan
ST3 Consistency	Potential ST3 operating plan effects	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations
Technical Feasibility	Engineering constraints	Low • Tunneling under buildings would likely require measures to control ground settlements • Tiebacks of existing buildings may conflict with the tunnels, requiring special measures • Potential conflicts with existing 5th Avenue S retaining wall and its piles • Additional design and constructability challenges likely due to potential conflict with abandoned UPRR tunnels • Mined stations in soils below groundwater table would likely require additional measures • Fairly deep cut-and-cover stations below groundwater would need a watertight retaining box • Tunneling may affect sewer tunnels	Low • Similar engineering constraints and special design requirements as for ST3 Representative Project's tunnels and stations • Would likely have fewer utility crossings than ST3 Representative Project • Crosses underneath prominent buildings such as Seattle Center, Key Arena and is in closer proximity to SR 99 ramps • More buildings with tieback conflicts compared to the ST3 Representative Project	Medium • North portal located in landslide prone topography with sensitive/potentially unstable hill slopes • Tunneling under buildings would likely require measures to control ground settlements • Tiebacks of existing buildings may conflict with the tunnels requiring special measures, but fewer then on 5th Avenue S • I-5 retaining wall affects tunnel profile	Low • North portal located in landslide prone topography with sensitive/potentially unstable hill slopes • Tunneling under buildings would likely require measures to control ground settlements • Tiebacks of existing buildings may conflict with the tunnels requiring special measures
Technical Feasibility	Constructability issues	Low • Monitoring of buildings may be required during construction due to settlement • TBM may require special features and tighter specifications • Tieback removal in advance of TBM may require construction of mined tunnels • Challenging construction of large span sequentially mined station caverns (Midtown and Westlake stations) • Deep multilevel cut-and-cover with water cut-off and base stability issues in soils under groundwater • Deep sewers in proximity to tunnel and station may require tunnel boring controls and monitoring of work • Tight TBM operations and special construction requirements to negotiate sharper curves	Low • Similar constructability constraints and special construction methods as the ST3 Representative Project • Crosses underneath prominent buildings such as Seattle Center and Key Arena • Likely has more buildings with tieback conflicts but fewer utilities to address during construction compared to ST3 Representative Project	Low • Stabilization and protection measures needed to construct tunnel portals in unstable slopes • Tunnel and sequentially mined station's constructability challenges would be similar to ST3 Representative Project • Potential to mine through building tiebacks • Limited construction staging area for Midtown Station adjacent to I-5	Low • Similar constructability challenges and constraints related to tieback removal along 5th Avenue S as the ST3 Representative Project • Similar constructability challenges and constraints, and requirement of special construction methods and measures as the 6th/Boren/Roy Alternative • Crossing underneath a number of buildings similar to the 6th/Boren/Roy Alternative

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Downtown Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives: ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Technical Feasibility (continued)	Operational constraints		Medium	Medium	High	Medium
			• Tighter radius curve between Denny and South Lake Union stations, resulting in reduced speed	• Tighter radius curve between Denny and South Lake Union stations, resulting in reduced speed • Higher grade between Midtown to Westlake stations compared to ST3 Representative Project	• Largest radius curve resulting in potentially higher speeds • Fewer profile changes compared to ST3 Representative Project	• Reduced radius curve compared to 6th/Boren/Roy Alternative • Fewer profile changes compared to ST3 Representative Project
Financial Sustainability	Conceptual capital cost comparison		--	$200 million increase	Similar	$200 million increase
			• Baseline for capital cost comparison to other alternatives within segment	• Approximately $200 million more than the ST3 Representative Project	• Similar to the ST3 Representative Project	• Approximately $200 million more than the ST3 Representative Project
	Operating cost impacts		Medium	Medium	Medium	Medium
			• O&M costs similar to other alternatives in segment	• O&M costs similar to other alternatives in segment	• O&M costs similar to other alternatives in segment	• O&M costs similar to other alternatives in segment
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.						
Historically Underserved Populations	Opportunities for low-income and minority populations	Assessment of improved access to opportunities	Medium	Medium	Medium	Medium
			• Stations are not located in areas of higher than average minority or low-income populations • Percent of population with household income below 2 times the poverty level is slightly higher than city average (28%), but average household size (1.5) is lower than city average (2.2) • Access to about 170 activity nodes would be provided for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	• Stations are not located in areas of higher than average minority or low-income populations • Percent of population with household income below 2 times the poverty level is slightly higher than city average (28%), but average household size (1.5) is lower than city average (2.2) • Access to about 170 activity nodes would be provided for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	• Stations are not located in areas of higher than average minority or low-income populations • Percent of population with household income below 2 times the poverty level is slightly higher than city average (28%), but average household size (1.5) is lower than city average (2.2) • Access to about 170 activity nodes would be provided for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	• Stations are not located in areas of higher than average minority or low-income populations • Percent of population with household income below 2 times the poverty level is slightly higher than city average (28%), but average household size (1.5) is lower than city average (2.2) • Access to about 170 activity nodes would be provided for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County
		Percent of rent-restricted or subsidized rental units	27%	29%	24%	26%
			• 27% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 29% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 24% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 26% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units
	Low-income population		28% / 30%	29% / 30%	28% / 30%	28% / 30%
			• City average is 24% • Low-income population within 10-minute walkshed is 4% above city average • Low-income population within 15-minute rideshed is 6% above city average • Average household income for walksheds is $64,051, which is similar to 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.5, less than city average of 2.1	• City average is 24% • Low-income population within 10-minute walkshed is 5% above city average • Low-income population within 15-minute rideshed is 6% above city average • Average household income for walksheds is $65,040, which is similar to 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.5, less than city average of 2.1	• City average is 24% • Low-income population within 10-minute walkshed is 4% above city average • Low-income population within 15-minute rideshed is 6% above city average • Average household income for walksheds is $67,711, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.5, less than city average of 2.1	• City average is 24% • Low-income population within 10-minute walkshed is 4% above city average • Low-income population within 15-minute rideshed is 6% above city average • Average household income for walksheds is $64,788, which is similar to 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.5, less than city average of 2.1

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

The Level 2 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 2 Alternatives Evaluation

Downtown Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Historically Underserved Populations (continued)	Minority population	36% / 36%	36% / 36%	34% / 36%	35% / 36%
		• City average is 34% • Minority population within 10-minute walkshed is 2% above city average • Minority population within 15-minute rideshed is 2% above city average	• City average is 34% • Minority population within 10-minute walkshed is 2% above city average • Minority population within 15-minute rideshed is 2% above city average	• City average is 34% • Minority population within 10-minute walkshed is the same as city average • Minority population within 15-minute rideshed is 2% above city average	• City average is 34% • Minority population within 10-minute walkshed is 1% above city average • Minority population within 15-minute rideshed is 2% above city average
	Youth population (under 18)	4% / 4%	4% / 4%	4% / 4%	4% / 4%
		• City average is 15% • Youth population within 10-minute walkshed is 11% below city average • Youth population within 15-minute rideshed is 11% below city average	• City average is 15% • Youth population within 10-minute walkshed is 11% below city average • Youth population within 15-minute rideshed is 11% below city average	• City average is 15% • Youth population within 10-minute walkshed is 11% below city average • Youth population within 15-minute rideshed is 11% below city average	• City average is 15% • Youth population within 10-minute walkshed is 11% below city average • Youth population within 15-minute rideshed is 11% below city average
	Elderly population (65 and over)	14% / 13%	14% / 13%	15% / 13%	14% / 13%
		• City average is 12% • Elderly population within 10-minute walkshed is 2% above city average • Elderly population within 15-minute rideshed is 1% above city average	• City average is 12% • Elderly population within 10-minute walkshed is 2% above city average • Elderly population within 15-minute rideshed is 1% above city average	• City average is 12% • Elderly population within 10-minute walkshed is 3% above city average • Elderly population within 15-minute rideshed is 1% above city average	• City average is 12% • Elderly population within 10-minute walkshed is 2% above city average • Elderly population within 15-minute rideshed is 1% above city average
	Limited English Proficiency (LEP) population	5% / 5%	5% / 5%	5% / 5%	5% / 5%
		• City average is 8% • LEP population within 10-minute walkshed is 3% below city average • LEP population within 15-minute rideshed is 3% below city average • Predominant languages spoken by LEP populations are Spanish and Chinese	• City average is 8% • LEP population within 10-minute walkshed is 3% below city average • LEP population within 15-minute rideshed is 3% below city average • Predominant languages spoken by LEP populations are Spanish and Chinese	• City average is 8% • LEP population within 10-minute walkshed is 3% below city average • LEP population within 15-minute rideshed is 3% below city average • Predominant languages spoken by LEP populations are Spanish and Chinese	• City average is 8% • LEP population within 10-minute walkshed is 3% below city average • LEP population within 15-minute rideshed is 3% below city average • Predominant languages spoken by LEP populations are Spanish and Chinese
	Disabled population	12% / 12%	12% / 12%	12% / 12%	12% / 12%
		• City average is 9% • Disabled population within 10-minute walkshed is 3% above city average • Disabled population within 15-minute rideshed is 3% above city average	• City average is 9% • Disabled population within 10-minute walkshed is 3% above city average • Disabled population within 15-minute rideshed is 3% above city average	• City average is 9% • Disabled population within 10-minute walkshed is 3% above city average • Disabled population within 15-minute rideshed is 3% above city average	• City average is 9% • Disabled population within 10-minute walkshed is 3% above city average • Disabled population within 15-minute rideshed is 3% above city average
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.					
Station Area Land Use Plan Consistency	Compatibility with Seattle designated Urban Centers and Villages	95%	96%	91%	92%
		• Almost all of the combined station walkshed (95%) is within an Urban Center Village	• Almost all of the combined station walkshed (96%) is within an Urban Center Village	• Almost all of the combined station walkshed (91%) is within an Urban Center Village; the exception is the northern edge of the walkshed	• Almost all of the combined station walkshed (92%) is within an Urban Center Village; the exception is the northern edge of the walkshed
	Station locations consistent with current local land use plans	High	High	High	High
		• Local land use plans supportive of all five stations	• Local land use plans supportive of all five stations	• Local land use plans supportive of all five stations	• Local land use plans supportive of all five stations

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Downtown Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Station Area Land Use Plan Consistency (continued)	Activity nodes served	171	171	169	168
		• There are many activity nodes in Downtown Seattle (171), including government services, social services, hospitals on First Hill, Westlake Center, and Seattle Center	• There are many activity nodes in Downtown Seattle (171), including government services, social services, hospitals on First Hill, Westlake Center, and Seattle Center	• There are many activity nodes in Downtown Seattle (169), including government services, social services, hospitals on First Hill, Westlake Center, and Seattle Center	• There are many activity nodes in Downtown Seattle (169), including government services, social services, hospitals on First Hill, Westlake Center, and Seattle Center
Modal Integration	Passenger transfers	Low	Medium	Medium	Medium
		• South Lake Union Station at Republican Street/SR 99 creates difficult transfer environment; adequate transfer opportunities at other two stations	• Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones	• Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones	• Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones
	Bus/rail and rail/rail integration	Low	Medium	Low	Medium
		• South Lake Union Station at Republican Street/SR 99 location precludes siting of many adjacent bus zones; 60% of transit routes less than one block walk of stations	• Average to good transportation integration opportunities; 72% of transit routes less than one block walk of stations • Seattle Center Station location on Harrison Street has limited opportunities to site adjacent bus zones	• Denny (Boren Avenue) and Seattle Center (Roy Street) station locations are not adjacent to many bus trips; 49% of transit routes less than one block walk of stations	• Average to good transportation integration opportunities; 73% of transit routes less than one block walk of stations • Some bus trips on Westlake Avenue are more than one block from Denny Station located on Terry Avenue
	Bicycle accessibility	23%	24%	23%	23%
		• 23% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 4.9 square miles • Similar bike facilities as other segment alternatives	• 24% of bicycle facility miles to roadway miles within bikeshed of stations; smallest bikeshed area is 4.8 square miles • Similar bike facilities as other segment alternatives	• 23% of bicycle facility miles to roadway miles within bikeshed of stations; largest bikeshed area is 5.1 square miles • Similar bike facilities as other segment alternatives	• 23% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 5.0 square miles • Similar bike facilities as other segment alternatives
	Pedestrian and persons with limited mobility accessibility	High	High	High	High
		• 517 intersections within combined walksheds • 79% of sidewalk/trail miles to total roadway miles within combined walksheds • Qualitative assessment of impediments is similar to other segment alternatives except the 6th/Boren/Roy Alternative	• 494 intersections within combined walksheds • 79% of sidewalk/trail miles to total roadway miles within combined walksheds • Qualitative assessment of impediments is similar to other segment alternatives except the 6th/Boren/Roy Alternative	• 555 intersections within combined walksheds • 78% of sidewalk/trail miles to total roadway miles within combined walksheds • This alternative has the most substantial grade changes within close proximity to a station and is the only alternative with a station close to I-5	• 551 intersections within combined walksheds • 79% of sidewalk/trail miles to total roadway miles within combined walksheds • Qualitative assessment of impediments is similar to other segment alternatives except the 6th/Boren/Roy Alternative
Station Area Development Opportunities	Development potential	12%	12%	12%	12%
		• All Downtown alternatives perform similarly, although this alternative has the lowest zoned capacity for additional households and jobs compared to the other alternatives within this segment; 12% of parcels with redevelopment potential	• All Downtown alternatives perform similarly; 12% of parcels with redevelopment potential	• All Downtown alternatives perform similarly; 12% of parcels with redevelopment potential	• All Downtown alternatives perform similarly; 12% of parcels with redevelopment potential
	Equitable development opportunities	Low	High	Medium	Medium
		• Limited opportunities near all downtown stations	• Greatest opportunities primarily at north end of segment with more land potentially available for development	• Greater opportunities near the South Lake Union Station	• Greater opportunities near the South Lake Union Station

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Downtown Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.					
Environmental Effects	National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle City Landmarks	31 • 31 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	35 • 35 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	23 • 23 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	34 • 34 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project
	Potential archaeological resources	Low • 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites	Low • 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites	Low • 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites	Low • 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites
	Parks and recreational resources	0 • No parks would be permanently impacted	0 • No parks would be permanently impacted	1.1 • Approximately 1.1 acres of permanent impacts to 1 park: Kinnear Park	0 • No parks would be permanently impacted
	Water resources	0 • No potential for permanent in-water impacts	0 • No potential for permanent in-water impacts	0 • No potential for permanent in-water impacts	0 • No potential for permanent in-water impacts
	Fish and wildlife habitat	0 • No permanent fish and wildlife habitat impacts	0 • No permanent fish and wildlife habitat impacts	1.1 • Approximately 1.1 acres of permanent habitat impacts • Impacts to Kinnear Park habitat	0 • No permanent fish and wildlife habitat impacts
	Hazardous materials	18 • Approximately 18 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	12 • Approximately 12 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	23 • Approximately 23 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	18 • Approximately 18 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel
	Visual	0 • Would not be above grade in any areas with sensitive viewers; would not affect protected views	0 • Would not be above grade in any areas with sensitive viewers; would not affect protected views	< 0.1 • About 500 feet of elevated guideway would be in Kinnear Park exiting the tunnel portal	0 • Would not be above grade in any areas with sensitive viewers; would not affect protected views
	Noise and vibration	High • Approximately 110 noise and vibration sensitive receivers within 350 feet of the alternative • Noise and vibration sensitive facilities include KEXP, UW Medicine, and performance halls on Mercer Street	Medium • Approximately 450 noise and vibration sensitive receivers within 350 feet of the alternative • Noise and vibration sensitive facilities include KEXP and potentially biotech research facilities	Medium • Approximately 260 noise and vibration sensitive receivers within 350 feet of the alternative • Noise and vibration sensitive facilities include biotech research facilities such as the Allen Institute for Brain Science	High • Approximately 220 noise and vibration sensitive receivers within 350 feet of the alternative • Noise and vibration sensitive facilities include biotech research facilities such as the Allen Institute for Brain Science as well as performance halls on Mercer Street

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Downtown Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives			
			ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Environmental Effects (continued)	Property acquisitions and displacements	Number of potentially affected properties	Medium • Less than 10 parcels affected	Medium • Less than 10 parcels affected	Medium • Less than 10 parcels affected	Medium • Less than 10 parcels affected
		Number of potential residential unit displacements	Medium • Between 40 and 90 potential residential unit displacements • Displacements would occur around north tunnel portal	High • Less than 40 potential residential unit displacements • Displacements would occur around north tunnel portal	Low • More than 90 potential residential unit displacements • Displacements would occur around north tunnel portal	Low • More than 90 potential residential unit displacements • Displacements would occur around north tunnel portal
		Square feet of potential business displacements	High • Less than 125,000 square feet of potential business displacements • Additional business displacements likely for entrances to underground stations	Low • More than 200,000 square feet of potential business displacements • Displacements would occur between Seattle Center Station and north tunnel portal • Additional business displacements likely for entrances to underground stations	High • Less than 125,000 square feet of potential business displacements • Displacements would occur for South Lake Union Station located outside of public right-of-way • Additional business displacements likely for entrances to underground stations	High • Less than 125,000 square feet of potential business displacements • Displacements would occur for South Lake Union Station located outside of public right-of-way • Additional business displacements likely for entrances to underground stations
	Construction impacts		Medium • Potential traffic, visual, noise and vibration construction impacts would be limited to areas around station entrances, vent locations, and the north portal • Midtown and Westlake stations are in primarily office/commercial areas and community impacts would primarily be related to traffic disruptions and business access • Denny, South Lake Union and Seattle Center stations would be in close proximity to multifamily residential buildings and would have potential for traffic, visual, noise, and vibration impacts on these neighborhoods • North portal location on Republican Street would be most disruptive to neighborhood west of 4th Avenue W	Low • Would have greatest amount of cut-and-cover construction in a neighborhood • Potential traffic, visual, noise and vibration construction impacts would be limited to areas around station entrances, vent locations, and the north portal • Midtown and Westlake stations are in primarily office/commercial areas and community impacts would primarily be related to traffic disruptions and business access • Denny, South Lake Union and Seattle Center stations would be in close proximity to multifamily residential buildings and would have potential for traffic, visual, noise, and vibration impacts on these neighborhoods • North portal location on Harrison Street would be most disruptive to neighborhood west of 1st Avenue N	Medium • Potential traffic, visual, noise and vibration construction impacts would be limited to areas around station entrances, vent locations, and the north portal • Midtown and Westlake stations are in primarily office/commercial areas and community impacts would primarily be related to traffic disruptions and business access • Denny, South Lake Union and Seattle Center stations would be in close proximity to multifamily residential buildings and would have potential for traffic, visual, noise, and vibration impacts on these neighborhoods • North portal construction in Kinnear Park would affect use of the park for extended periods of time	High • Potential traffic, visual, noise and vibration construction impacts would be limited to areas around station entrances, vent locations, and the north portal • Midtown and Westlake stations are in primarily office/commercial areas and community impacts would primarily be related to traffic disruptions and business access • Denny, South Lake Union and Seattle Center stations would be in close proximity to multifamily residential buildings and would have potential for traffic, visual, noise, and vibration impacts on these neighborhoods • North portal construction in Kinnear Park would be limited to the northern edge of the park that does not have public uses, and use of the park should not be affected by construction

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Downtown Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives			
		ST3 Representative Project	5th/Harrison	6th/Boren/Roy	5th/Terry/Roy/Mercer
Environmental Effects (continued)	Burden on minority and low-income populations	Medium • Construction period impacts would occur in areas with minority and low-income populations above the city average around the Midtown, Westlake, Denny and South Lake Union stations; displacements for station entrances could occur for these stations as well • Midtown, Westlake, and Denny stations located in areas of higher displacement risk • No permanent noise or visual impacts are expected for these populations because the alternative would be in a tunnel	Medium • Construction period impacts would occur in areas with minority and low-income populations above the city average around the Midtown, Westlake, Denny and South Lake Union stations; displacements for station entrances could occur for these stations as well • Midtown, Westlake, and Denny stations located in areas of higher displacement risk • No permanent noise or visual impacts are expected for these populations because the alternative would be in a tunnel	Medium • Construction period impacts would occur in areas with minority and low-income populations above the city average around the Midtown, Westlake, Denny and South Lake Union stations; displacements for station entrances could occur for these stations as well • Midtown, Westlake, and Denny stations located in areas of higher displacement risk • No permanent noise or visual impacts are expected for these populations because the alternative would be in a tunnel	Medium • Construction period impacts would occur in areas with minority and low-income populations above the city average around the Midtown, Westlake, Denny and South Lake Union stations; displacements for station entrances could occur for these stations as well • Midtown, Westlake, and Denny stations located in areas of higher displacement risk • No permanent noise or visual impacts are expected for these populations because the alternative would be in a tunnel
Traffic Operations	Traffic circulation and access	High • Tunnel alignment below grade; no permanent impacts to roadways	High • Tunnel alignment below grade; no permanent impacts to roadways	High • Tunnel alignment below grade; no permanent impacts to roadways	High • Tunnel alignment below grade; no permanent impacts to roadways
	Transportation facilities	Medium • Transportation facilities affected include temporary closure of SR 99 off-ramp and Streetcar	Low • Transportation facilities affected include existing Westlake Station, SR 99 tunnel portal and Streetcar	High • Transportation facilities affected include I-5 walls and Aurora Avenue	Medium • Transportation facilities affected include existing Westlake Station, Aurora Avenue and Mercer Street
Economic Effects	Freight movement and access on land and water	High • No permanent impacts to land or water freight are expected • Road closures during construction at cut-and-cover stations could affect some truck freight movements	High • No permanent impacts to land or water freight are expected • Road closures during construction at cut-and-cover stations could affect some truck freight movements	High • No permanent impacts to land or water freight are expected • Road closures during construction at cut-and-cover stations could affect some truck freight movements	High • No permanent impacts to land or water freight are expected • Road closures during construction at cut-and-cover stations could affect some truck freight movements
	Business and commerce effects	High • Least amount of business displacement compared to other Downtown alternatives • Business displacements would mostly occur around the north tunnel portal; additional business displacements would likely occur for station entrances • Temporary construction traffic impacts would occur for local freight traffic and affect businesses around station areas	Low • Greatest amount of business displacement compared to other Downtown alternatives • Business displacements would mostly occur around the north tunnel portal; additional business displacements would likely occur for station entrances • Temporary construction traffic impacts would occur for local freight traffic and affect businesses around station areas	Medium • Moderate amount of business displacement compared to other Downtown alternatives • Business displacements would mostly occur around the South Lake Union Station, which would be located outside of street right-of-way; additional business displacements would likely occur for station entrances • Temporary construction traffic impacts would occur for local freight traffic and affect businesses around station areas	Medium • Moderate amount of business displacement compared to other Downtown alternatives • Business displacements would mostly occur around the South Lake Union Station, which would be located outside of street right-of-way; additional business displacements would likely occur for other station entrances • Temporary construction traffic impacts would occur for local freight traffic and affect businesses around station areas

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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APPENDIX E

Interbay/Ballard Segment
Level 2 Evaluation Matrices

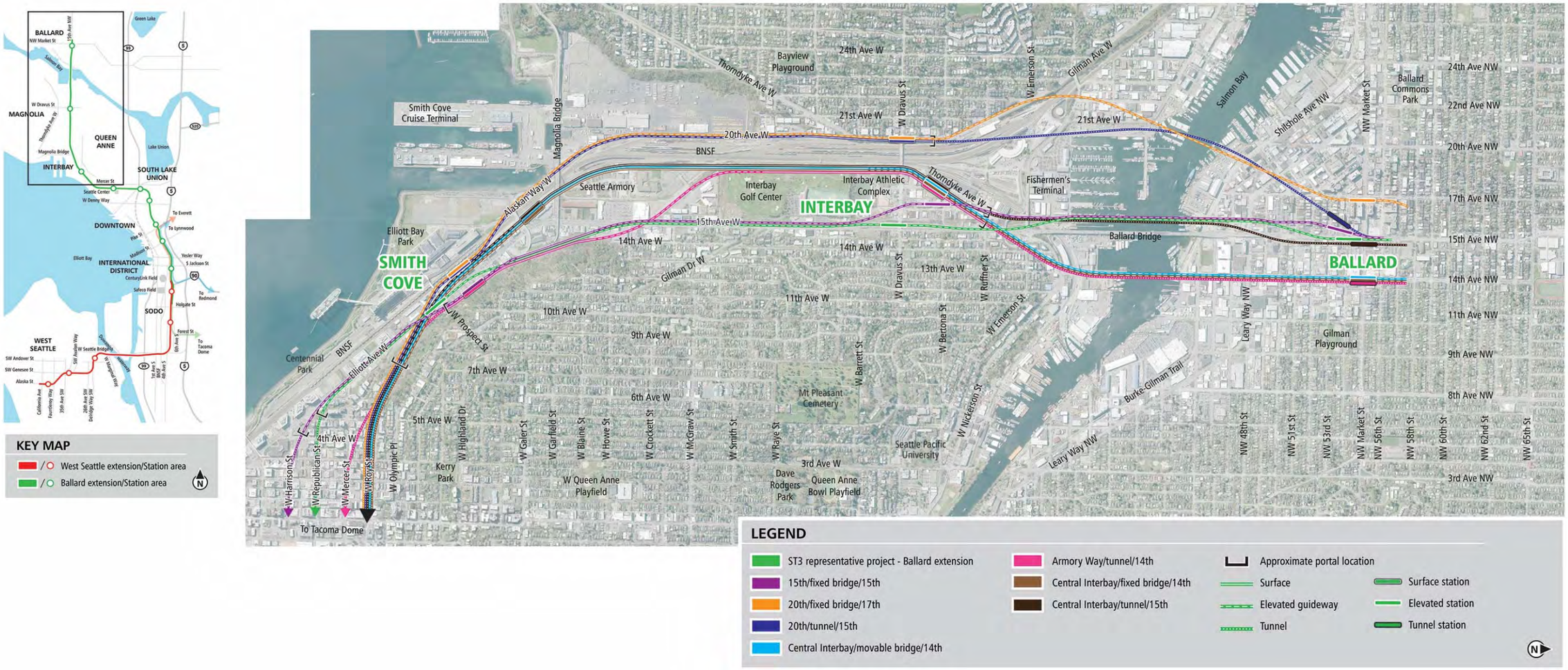

Figure E-1 Interbay/Ballard Segment—Level 2 Alternatives

The Level 2 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 2 Alternatives Evaluation Summary

Interbay/Ballard Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives							
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th	Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.									
Potential service interruptions and recoverability	Likelihood of service interruptions during peak and off-peak travel periods (High=low likelihood)	Low	High	High	High	Low	High	High	High
LRT travel times	Estimated travel times within segments based on alignment characteristics (minutes)	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6	5 to 6
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.									
LRT network integration	Ability to accommodate spine segmentation, LRT system connectivity, and operational flexibility	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Passenger carrying capacity in downtown	Combined passenger carrying capacity of downtown transit tunnels	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Ridership potential	Future Puget Sound Regional Council (PSRC) forecasted 2040 total population and employment within 10-minute walkshed of WSBLE Project stations	17,200	16,700	19,000	17,800	15,400	16,400	15,400	16,500
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.									
Station proximity to PSRC-designated regional growth centers	Number of PSRC-designated regional growth centers served by stations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Station proximity to PSRC-designated manufacturing/industrial centers	Number of PSRC-designated manufacturing/industrial centers served by stations	1	1	1	1	1	1	1	1
Accommodates future LRT extension beyond ST3	Expansion potential of future LRT extensions identified in Sound Transit Long-Range Plan	Medium	Medium	Low	High	Medium	High	Medium	High
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.									
Mode, route and general station locations per ST3	Consistency of mode, route and general station locations per ST3	High	High	High	High	High	High	High	High
Potential ST3 implementation schedule effects	Constructability, environmental or other issues/challenges that may cause WSBLE Project schedule risks	High	High	High	High	High	High	High	High
Potential ST3 operating plan effects	Integration of WSBLE Project into existing LRT spine and overall system (i.e., special trackwork, movable bridge implications, etc.)	Low	High	High	High	Low	High	High	High
Engineering constraints	Compliance with Sound Transit Design Criteria Manual, design criteria from agencies with jurisdiction and federal regulations, and engineering obstacles associated with major infrastructure constraints	Medium	Medium	Medium	Low	High	Low	High	Low
Constructability issues	Constructability issues based on potential conflicts and technical challenges	Medium	Medium	Medium	Low	High	Low	High	Low
Operational constraints	Assessment of operational constraints (e.g., access to maintenance facility, vertical grade, horizonal curvature, movable bridge, etc.)	Low	High	High	High	Low	High	High	High

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

Interbay/Ballard Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives							
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th	Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Conceptual capital cost comparison	Conceptual capital cost comparison to ST3 Representative Project based on conceptual design quantities and current Sound Transit unit pricing (2017$)	--	$200 million increase	$500 million increase	$700 million increase	$200 million increase	$300 million increase	$100 million increase	$500 million increase
Operating cost impacts	Assessment of operations and maintenance (O&M) cost impacts	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.									
Opportunities for low-income and minority populations	Overlay of activity nodes data with minority, LEP, and low-income populations	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Percent of rent-restricted or subsidized rental units within 10-minute walkshed	8%	9%	8%	8%	8%	8%	8%	9%
Low-income population	Low-income population percentage (i.e., households below 2 times the federal poverty level) within 10-minute walkshed and 15-minute ride on connecting high frequency transit	19% / 18%	20% / 18%	20% / 18%	20% / 18%	19% / 18%	19% / 18%	19% / 18%	19% / 18%
Minority population	Minority population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	21% / 20%	21% / 20%	21% / 20%	21% / 20%	21% / 20%	21% / 20%	21% / 20%	21% / 20%
Youth population (under 18)	Youth population (under 18) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	9% / 12%	11% / 12%	11% / 12%	11% / 12%	12% / 12%	11% / 12%	12% / 12%	10% / 12%
Elderly population (65 and over)	Elderly population (65 and over) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	10% / 10%	10% / 10%	10% / 10%	10% / 10%	9% / 10%	9% / 10%	9% / 10%	10% / 10%
Limited English Proficiency (LEP) population	LEP population percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit (Predominant languages spoken by LEP populations will be noted)	4% / 3%	4% / 3%	4% / 3%	4% / 3%	3% / 3%	3% / 3%	3% / 3%	3% / 3%
Disabled population	Disabled population (includes those with hearing, vision, or ambulatory disability) percentage within 10-minute walkshed and 15-minute ride on connecting high frequency transit	9% / 8%	9% / 8%	9% / 8%	9% / 8%	8% / 8%	8% / 8%	8% / 8%	9% / 8%
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.									
Compatibility with Seattle designated Urban Centers and Villages	Percent of 10-minute station walkshed land area located within Seattle-designated Urban Centers and/or Villages	35%	34%	38%	31%	26%	28%	26%	36%
Station locations consistent with current local land use plans	Compatibility and consistency of station locations with current local land use plans	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Activity nodes served	Number of activity nodes within 10-minute walkshed of stations	26	32	36	33	24	23	24	35
Passenger transfers	Ease of passenger transfers for transit customers between motorized modes	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Bus/rail and rail/rail integration	Assessment of peak-hour rail and bus trips immediately adjacent to stations	High	Medium	Medium	High	High	High	High	High

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation Summary

Interbay/Ballard Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives							
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th	Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Bicycle accessibility	Percent of bicycle facility miles to roadway miles within 10-minute bikeshed of stations	19%	19%	19%	19%	17%	19%	17%	18%
Pedestrian and persons with limited mobility accessibility	Assessment of number of intersections, percent of sidewalk/trail miles to total roadway miles, and impediments to pedestrian and American with Disabilities Act (ADA) access within 10-minute walkshed of stations	Low	Medium	High	High	Low	Medium	Low	Medium
Development potential	Development potential within 10-minute walkshed of stations (5-minute walkshed in downtown)	34%	34%	37%	35%	33%	33%	33%	34%
Equitable development opportunities	Assessment of unique opportunities for equitable development enabled by station location and/or conceptual configuration	Low	High	Low	Low	Medium	Medium	Medium	High
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.									
National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle City Landmarks	Number of NRHP listed or eligible properties potentially affected	5	7	3	3	3	2	3	3
Potential archaeological resources	Assessment of the percent of alternative length within Very High Risk or High Risk probability areas using Department of Archaeology and Historic Preservation predictive model	Low	Low	Low	Low	Low	Low	Low	Low
Parks and recreational resources	Estimated acres of potential impacts to parks	0.2	1	0.9	0.9	4.2	3.9	4.2	3.9
Water resources	Estimated acres of potential permanent in-water impacts	0.7	0.6	0	0	0.7	0	0.4	0
Fish and wildlife habitat	Estimated acres of potential permanent fish and wildlife habitat impacts	11	11	0.5	0.5	0.5	11.4	0.5	0.5
Hazardous materials	Number of contaminated sites of high concern potentially impacted, including Superfund sites	11	15	11	11	16	12	16	12
Visual	Miles of alignment adjacent to visually sensitive viewers, assessment of scale of elevated guideway in visually sensitive areas, and potential impacts to SEPA Scenic Routes	1.2	0.3	0.6	0.1	0.7	0.8	0.7	0.6
Noise and vibration	Assessment of the number of noise and vibration sensitive receivers potentially affected	High	High	Low	Medium	High	High	High	High
Property acquisitions and displacements	Number of properties potentially affected	Medium	Low	Low	High	High	High	High	High
	Number of potential residential unit displacements	High	Low	Low	Medium	Medium	High	Medium	High
	Square feet of potential business displacements	Medium	Medium	Medium	High	Medium	High	Medium	Low
Construction impacts	Assessment of temporary construction impacts to community, including potential for transportation, access, noise, vibration, and visual effects that could disrupt the community (e.g., existing residents, businesses, social service providers), and relative duration of construction and impacts to high volume traffic areas	Low	Medium	Low	Medium	High	High	High	Medium

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Level 2 Alternatives Evaluation Summary

Interbay/Ballard Segment

Purpose and Need / Evaluation Measures and Methods		Alternatives							
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th	Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Burden on minority and low-income populations	Potential acquisitions and displacements and visual, noise and construction impacts in areas with minority and low-income populations greater than the city average and overlay of displacement risk	High	High	High	High	High	High	High	High
Traffic circulation and access	Effects on traffic and transit (i.e., bus and streetcar) operations	Low	Medium	Medium	High	Medium	High	Medium	High
Transportation facilities	Effects on existing transportation facilities, including bicycle lanes, sidewalks, traffic interchanges and other transportation infrastructure as warranted, and compatibility with planned facilities	Medium	High	Low	Medium	Medium	High	Medium	Medium
Freight movement and access on land and water	Effects on existing and future freight mobility and future freight capacity expansion opportunities, including both on land and water	Low	Medium	Medium	Medium	Medium	High	Medium	High
Business and commerce effects	Effects on businesses, as well as commercial and industrial areas, including potential impacts during construction and operations from changes in access, travel patterns and displacements	Low	Low	Medium	High	Medium	High	Medium	Medium

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native
3. Property Acquisitions and Displacements:
   Number of properties potentially affected: High = Less than 55 parcels; Medium = Between 55 and 80 parcels; Low = More than 80 parcels
   Number of potential residential displacements: High = Less than 100 units; Medium = Between 100 and 300 units; Low = More than 300 units
   Area of potential business displacements: High = Less than 375,000 square feet; Medium = Between 375,000 and 650,000 square feet; Low = More than 650,000 square feet

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.					
Reliable Service	Potential service interruptions and recoverability	Low • Bridge openings would interrupt LRT operations • Restrictions to limit bridge openings during peak travel hours could be implemented, but the bridge could still be opened if requested from large ships of a certain size; it is unclear when and how often this could occur, but recoverability of LRT operations could be challenging	High • Fully grade separated	High • Fully grade separated	High • Fully grade separated
Travel Times	LRT travel times	5 to 6 • Estimated 5 to 6 minute travel time measured from Smith Cove Station to Ballard Station • Speed reduction was assumed for crossing movable bridge • All alternatives have similar travel times	5 to 6 • Estimated 5 to 6 minute travel time measured from Smith Cove Station to Ballard Station • All alternatives have similar travel times	5 to 6 • Estimated 5 to 6 minute travel time measured from Smith Cove Station to Ballard Station • All alternatives have similar travel times	5 to 6 • Estimated 5 to 6 minute travel time measured from Smith Cove Station to Ballard Station • All alternatives have similar travel times
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.					
Regional Connectivity	LRT network integration	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity
Transit Capacity	Passenger carrying capacity in downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown
Projected Transit Demand	Ridership potential	17,200 • Approximately 17,200 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	16,700 • Approximately 16,700 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	19,000 • Approximately 19,000 forecasted population and employment within 10-minute walkshed of stations 13% greater than segment average due to the Interbay Station capturing more population to the west of 20th Avenue W and the Ballard Station on 17th Avenue NW also serving a larger market to the west	17,800 • Approximately 17,800 forecasted population and employment within 10-minute walkshed of stations 6% greater than segment average due to the Interbay Station capturing more population to the west of 20th Avenue W
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.					
Regional Centers Served	Station proximity to PSRC-designated regional growth centers	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment
	Station proximity to PSRC-designated manufacturing/industrial centers	1 • All stations within reasonable walking distance of Ballard-Interbay manufacturing/industrial center	1 • All stations located in Ballard-Interbay manufacturing/industrial center	1 • All stations located in Ballard-Interbay manufacturing/industrial center	1 • All stations located in Ballard-Interbay manufacturing/industrial center

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Medium • Elevated station on a north-south alignment south of NW Market Street; tail track north-south • A connected eastward extension per Long-Range Plan is feasible and includes surface disruptions; an independent extension is also feasible with potentially less surface disruption compared to connected extension	Medium • Elevated station on a north-south alignment south of NW Market Street; tail track north-south • A connected eastward extension per Long-Range Plan is feasible and includes surface disruptions; an independent extension is also feasible with potentially less surface disruption compared to connected extension	Low • Elevated station on a north-south alignment straddling NW Market Street; tail track north-south • A connected eastward extension per Long-Range Plan is more challenging due to greater surface disruptions with the terminal station in an area of higher residential and business densities at 17th Avenue NW; an independent extension is also feasible with potentially less surface disruption compared to connected extension	High • Station on a north-south alignment south of NW Market Street; tail track north-south or east-west • A connected eastward extension per Long-Range Plan is more feasible and direct with potentially less surface disruptions; an independent extension is also feasible
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.					
ST3 Consistency	Mode, route and general station locations per ST3	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan
	Potential ST3 implementation schedule effects	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan
	Potential ST3 operating plan effects	Low • Movable bridge degrades system operations due to system reliability effects and potential need for turnback operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations
Technical Feasibility	Engineering constraints	Medium • Long spans and structures over existing interchanges • Coordination with Port of Seattle for column placements in Fishermen's Terminal • Movable bridge in a high seismic zone • Locating straddle bents to minimize roadway impacts along Elliott Avenue W, 15th Avenue W, 15th Avenue NW on both sides of NW Market Street • Reconfiguring roadway channelization to address capacity at intersections along 15th Avenue W/NW • Large diameter existing and planned utility constraints under Shilshole Avenue NW • Potential SCL overhead power line conflicts • Landslide hazard along hillside may require walls with tiebacks	Medium • Long spans and structures over existing interchanges • Coordination with Port of Seattle for column placements in Fishermen's Terminal • Locating straddle bents to minimize roadway impacts along Elliott Avenue W, and 15th Avenue NW north of NW Market Street • Reconfiguring roadway channelization to address capacity at intersections along Elliott Avenue W and 15th Avenue NW at NW Market Street • Potential SCL overhead power line conflicts • Large diameter existing and planned utility constraints under Shilshole Avenue NW • Landslide hazard along hillside may require walls with tiebacks	Medium • Long spans over BNSF Railway and Magnolia Bridge • Coordination with BNSF and Port of Seattle to accommodate current and future operations • Constrained column placements along existing roadways, trails, railroads, utilities and parks • Ground improvements for guideway columns • Potential roadway modifications at 20th Avenue W and W Dravus Street • Potential relocation of 144-inch-diameter combined sewer (CS) and W Commodore Way roadway • Coordinate bridge column locations with large diameter existing and planned utilities under W Commodore Way and Shilshole Avenue NW	Low • Long spans over BNSF Railway and Magnolia Bridge • Coordination with BNSF and Port of Seattle to accommodate current and future operations • Constrained column placements along existing roadways, trails, railroads, utilities and parks • Ground improvements for guideway columns • Potential tall walls with tiebacks for retained cut Interbay Station under W Dravus Street Bridge • Reconstruction of W Dravus Street Bridge end span may need to be designed to current seismic standards • Potential ground improvements in vicinity of tunnel portal • Deeper tunnel and Ballard Station to clear under large diameter planned SPU storage tunnel under Shilshole Avenue NW • Potential realignment of Elliott Bay Trail

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 1 of 2)			
			ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Technical Feasibility (continued)	Constructability issues		Medium	Medium	Medium	Low
			• Potential maintenance of traffic challenges during construction along entire length of Elliott Avenue W and 15th Avenue W/NW, which are Principal Arterials • Potential challenges for construction of bridges over existing infrastructure bridges, active roadways, railroads and Salmon Bay • In-water construction activities for multiple piers would need to take into account vessel traffic in the navigation channel and fish windows • Limited areas for construction staging and laydown for construction of elevated guideway on both sides of Salmon Bay • Need to maintain access to maritime properties • Steep hillside along Queen Anne Hill prone to sliding	• Potential maintenance of traffic challenges during construction along Elliott Avenue W and along 15th Avenue NW at NW Market Street, which are Principal Arterials • Potential challenges for construction of bridges over existing infrastructure bridges, active roadways, railroads and Salmon Bay • In-water construction activities for multiple piers would need to take into account vessel traffic in the navigation channel and fish windows • Limited areas for construction staging and laydown for construction of elevated guideway on both sides of Salmon Bay • Need to maintain access to maritime properties • Steep hillside along Queen Anne Hill prone to sliding	• Coordination of construction access and staging for guideway columns and associated ground improvements with BNSF, Port of Seattle, Expedia, and city of Seattle • Maintenance of traffic challenges around guideway columns • Long duration of construction of fixed long span bridge across waterway • Could include in-water construction activities	• Coordination of construction access and staging for guideway columns and associated ground improvements with BNSF, Port of Seattle, Expedia, and city of Seattle • Potential maintenance of traffic challenges from phased construction of W Dravus Street bridge end spans • Potential for long duration closures of 20th Avenue W north of W Dravus Street for Tunnel Boring Machine (TBM) launch • Potential challenges identifying muck hauling routes time of day requirements • Construction of tunnel portal constrained between BNSF and 20th Avenue W roadway • Construction of cross passages under water may be challenging • Potential maintenance of traffic challenges associated with deep excavation for a cut-and-cover Ballard Station
	Operational constraints		Low	High	High	High
			• Movable bridge openings would have an impact on systemwide operations • Design speeds maintained for horizontal and vertical geometry of route alignment	• Fixed bridge would not require openings for vessel traffic • Design speeds maintained for horizontal and vertical geometry of route alignment	• Fixed bridge would not require openings for vessel traffic • Design speeds maintained for horizontal and vertical geometry of route alignment	• Tunnel would not require openings for vessel traffic • Design speeds maintained for horizontal and vertical geometry of route alignment
Financial Sustainability	Conceptual capital cost comparison		--	$200 million increase	$500 million increase	$700 million increase
			• Baseline for capital cost comparison to other alternatives within segment	• Approximately $200 million more than the ST3 Representative Project	• Approximately $500 million more than the ST3 Representative Project	• Approximately $700 million more than the ST3 Representative Project • Tunnel costs not included in ST3 financial plan or evaluation methodology
	Operating cost impacts		Medium	Medium	Medium	Medium
			• Mixture of vertical profile types and Salmon Bay crossing type in this alternative would have comparable operating cost impacts as other alternatives	• Mixture of vertical profile types and Salmon Bay crossing type in this alternative would have comparable operating cost impacts as other alternatives	• Mixture of vertical profile types and Salmon Bay crossing type in this alternative would have comparable operating cost impacts as other alternatives	• Mixture of vertical profile types and Salmon Bay crossing type in this alternative would have comparable operating cost impacts as other alternatives
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.						
Historically Underserved Populations	Opportunities for low-income and minority populations	Assessment of improved access to opportunities	Medium	Medium	Medium	Medium
			• Stations are not located in areas of higher than average historically underserved populations (minority, low-income, LEP, elderly, youth or disabled) • Access to about 25 activity nodes would be improved for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	• Stations are not located in areas of higher than average historically underserved populations (minority, low-income, LEP, elderly, youth or disabled) • Access to about 30 activity nodes would be improved for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	• Stations are not located in areas of higher than average historically underserved populations (minority, low-income, LEP, elderly, youth or disabled) • Access to about 35 activity nodes would be improved for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	• Stations are not located in areas of higher than average historically underserved populations (minority, low-income, LEP, elderly, youth or disabled) • Access to about 35 activity nodes would be improved for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County

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Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 1 of 2)			
			ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Historically Underserved Populations (continued)	Opportunities for low-income and minority populations (continued)	Percent of rent-restricted or subsidized rental units	8%	9%	8%	8%
			• 8% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 9% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 8% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	• 8% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units
	Low-income population		19% / 18%	20% / 18%	20% / 18%	20% / 18%
			• City average is 24% • Low-income population within 10-minute walkshed is 5% below city average • Low-income population within 15-minute rideshed is 6% below city average • Average household income for walksheds is $77,521, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.0, less than city average of 2.1	• City average is 24% • Low-income population within 10-minute walkshed is 4% below city average • Low-income population within 15-minute rideshed is 6% below city average • Average household income for walksheds is $78,681, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.0, less than city average of 2.1	• City average is 24% • Low-income population within 10-minute walkshed is 4% below city average • Low-income population within 15-minute rideshed is 6% below city average • Average household income for walksheds is $78,545, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 1.9, less than city average of 2.1	• City average is 24% • Low-income population within 10-minute walkshed is 4% below city average • Low-income population within 15-minute rideshed is 6% below city average • Average household income for walksheds is $80,223, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.0, less than city average of 2.1
	Minority population		21% / 20%	21% / 20%	21% / 20%	21% / 20%
			• City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 14% below city average	• City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 14% below city average	• City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 14% below city average	• City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 14% below city average
	Youth population (under 18)		9% / 12%	11% / 12%	11% / 12%	11% / 12%
			• City average is 15% • Youth population within 10-minute walkshed is 6% below city average • Youth population within 15-minute rideshed is 3% below city average	• City average is 15% • Youth population within 10-minute walkshed is 4% below city average • Youth population within 15-minute rideshed is 3% below city average	• City average is 15% • Youth population within 10-minute walkshed is 4% below city average • Youth population within 15-minute rideshed is 3% below city average	• City average is 15% • Youth population within 10-minute walkshed is 4% below city average • Youth population within 15-minute rideshed is 3% below city average
	Elderly population (65 and over)		10% / 10%	10% / 10%	10% / 10%	10% / 10%
			• City average is 12% • Elderly population within 10-minute walkshed is 2% below city average • Elderly population within 15-minute rideshed is 2% below city average	• City average is 12% • Elderly population within 10-minute walkshed is 2% below city average • Elderly population within 15-minute rideshed is 2% below city average	• City average is 12% • Elderly population within 10-minute walkshed is 2% below city average • Elderly population within 15-minute rideshed is 2% below city average	• City average is 12% • Elderly population within 10-minute walkshed is 2% below city average • Elderly population within 15-minute rideshed is 2% below city average
	Limited English Proficiency (LEP) population		4% / 3%	4% / 3%	4% / 3%	4% / 3%
			• City average is 8% • LEP population within 10-minute walkshed is 4% below city average • LEP population within 15-minute rideshed is 5% below city average • Predominant languages spoken by LEP populations are Korean and Spanish	• City average is 8% • LEP population within 10-minute walkshed is 4% below city average • LEP population within 15-minute rideshed is 5% below city average • Predominant languages spoken by LEP populations are Korean and Spanish	• City average is 8% • LEP population within 10-minute walkshed is 4% below city average • LEP population within 15-minute rideshed is 5% below city average • Predominant languages spoken by LEP populations are Korean and Other Asian and Pacific Island languages	• City average is 8% • LEP population within 10-minute walkshed is 4% below city average • LEP population within 15-minute rideshed is 5% below city average • Predominant languages spoken by LEP populations are Korean and Other Asian and Pacific Island languages

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Historically Underserved Populations (continued)	Disabled population	9% / 8% • City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is 1% below city average	9% / 8% • City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is 1% below city average	9% / 8% • City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is 1% below city average	9% / 8% • City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is 1% below city average
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.					
Station Area Land Use Plan Consistency	Compatibility with Seattle designated Urban Centers and Villages	35% • 35% percent of combined station walksheds within urban centers and villages • Ballard Station walkshed includes the third most area of the Hub Urban Village compared to the other alternatives • There is also a small area of the Uptown Urban Center Village within the Smith Cove Station walkshed • Most of the walkshed within an Urban Village is at the Ballard Station	34% • 34% percent of combined station walksheds within urban centers and villages • Ballard Station walkshed includes an area of the Hub Urban Village • There is also a small area of the Uptown Urban Center Village within the Smith Cove Station walkshed • Most of the walkshed within an Urban Village is at the Ballard Station	38% • 38% percent of combined station walksheds within urban centers and villages • Ballard Station walkshed includes the most area of the Hub Urban Village compared to the other alternatives • There is also a small area of the Uptown Urban Center Village within the Smith Cove Station walkshed • Most of the walkshed within an Urban Village is at the Ballard Station	31% • 31% percent of combined station walksheds within urban centers and villages • Ballard Station walkshed includes an area of the Hub Urban Village • There is also a small area of the Uptown Urban Center Village within the Smith Cove Station walkshed • Most of the walkshed within an Urban Village is at the Ballard Station
	Station locations consistent with current local land use plans	Medium • Expedia campus development at Smith Cove Station underway • Interbay Station would be located between a Seattle Mixed zone and a Neighborhood Commercial zone, both supporting a mix of housing and commercial uses • Recent planning efforts at Ballard Station include the Urban Design and Transportation Framework (2016) and a multimodal transportation plan (Move Ballard), both developed in anticipation of light rail	Medium • Expedia campus development at Smith Cove Station underway • Interbay Station would be located in area currently zoned Industrial • Recent planning efforts at Ballard Station include the Urban Design and Transportation Framework (2016) and a multimodal transportation plan (Move Ballard), both developed in anticipation of light rail	Medium • Expedia campus development at Smith Cove Station underway • Some recent planning efforts at Interbay area but primarily east of BNSF • Recent planning efforts at Ballard Station include the Urban Design and Transportation Framework (2016) and a multimodal transportation plan (Move Ballard), both developed in anticipation of light rail	Medium • Expedia campus development at Smith Cove Station underway • Some recent planning efforts at Interbay area but primarily east of BNSF • Recent planning efforts at Ballard Station include the Urban Design and Transportation Framework (2016) and a multimodal transportation plan (Move Ballard), both developed in anticipation of light rail
	Activity nodes served	26 • This alternative includes a station on the central/east side of central Ballard in a similar location to many of the other alternatives; the walkshed provides access to 26 activity nodes, including medical centers in Ballard, the Queen Anne Greenbelt, and Interbay Playfield	32 • This alternative includes a station on the central/east side of central Ballard; the walkshed provides access to 32 activity nodes, including the Ballard Food Bank and Ballard Library • This alternative also includes access to medical centers in Ballard, the Queen Anne Greenbelt, and Interbay Playfield	36 • This alternative includes a station centrally located in Ballard; the walkshed provides access to the highest number of activity centers (36) among the Interbay/Ballard Alternatives, including the Ballard Food Bank, Ballard Library, and Ballard Commons Park • This alternative also includes access to medical centers in Ballard, the Queen Anne Greenbelt, and Interbay Playfield	33 • This alternative includes a station on the central/east side of central Ballard; the walkshed provides access to 33 activity nodes, including the Ballard Food Bank and Ballard Library • This alternative also includes access to medical centers in Ballard, the Queen Anne Greenbelt, and Interbay Playfield
Modal Integration	Passenger transfers	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Modal Integration (continued)	Bus/rail and rail/rail integration	High • Good bus access at proposed stations; 85% of transit routes less than one block walk of stations • Good bus integration at Smith Cove Station compared to other alternatives east of or west of Elliott Avenue W • Good integration at Interbay Station located on 15th Avenue W compared to stations locations near Thorndyke Avenue W/16th Avenue W • A few bus zones may be farther than a one block walk or require more than two signalized crossings at the Ballard Station east of 15th Avenue NW and south of Market Street NW	Medium • Average to good transportation integration opportunities; 75% of transit routes less than one block walk of stations • Some bus zones may be farther than a one block walk or require more than two signalized crossings at the Ballard Station west of 15th Avenue W and south of Market Street NW, at Interbay Station near 16th Avenue W, and at Smith Cove Station located east of Elliott Avenue W	Medium • Average to good transportation integration opportunities; 79% of transit routes less than one block walk of stations • Some bus zones may be farther than a one block walk or require more than two signalized crossings at the Ballard Station on 17th Avenue NW and at Smith Cove Station west of Elliott Avenue W • Interbay Station has relatively good transit integration compared to a station located near Thorndyke Avenue W as it has a simple bus reroute to station	High • Good bus access at proposed stations; 83% of transit routes less than one block walk of stations • A few bus zones may be farther than a one block walk or require more than two signalized crossings • Interbay Station has relatively good transit integration compared to a station located near Thorndyke Avenue W as it has a simple bus reroute to station
	Bicycle accessibility	19% • 19% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 5.0 square miles • Similar bike facilities as other segment alternatives	19% • 19% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 4.9 square miles • Similar bike facilities as other segment alternatives	19% • 19% of bicycle facility miles to roadway miles within bikeshed of stations; largest bikeshed area is 5.1 square miles • Similar bike facilities as other segment alternatives	19% • 19% of bicycle facility miles to roadway miles within bikeshed of stations; largest bikeshed area is 5.1 square miles • Similar bike facilities as other segment alternatives
	Pedestrian and persons with limited mobility accessibility	Low • 178 intersections within walksheds • 92% of sidewalk/trail miles to total roadway miles within walksheds • Elliott Avenue W/15th Avenue W/15th Avenue NW have limited signalized intersections and high traffic volumes; affects three stations • Major freight route; affects three stations • NW Market Street/15th Avenue NW is major intersection, with bus, freight, and signal timing; affects Ballard Station • Proximity to industrial area with wide curb cuts/loading areas; although stations are near industrial zones, all station locations are away from main loading areas	Medium • 181 intersections within walksheds • 91% of sidewalk/trail miles to total roadway miles within walksheds • Elliott Avenue W/15th Avenue W/15th Avenue NW have limited signalized intersections and high traffic volumes; affects Smith Cove and Ballard Stations • Major freight route; affects Smith Cove and Ballard stations • NW Market Street/15th Avenue NW is major intersection with bus, freight, and signal timing; affects Ballard Station • Proximity to industrial area with wide curb cuts/loading areas; affects Interbay Station	High • 177 intersections within walksheds • 93% of sidewalk/trail miles to total roadway miles within walksheds • Elliott Avenue W/15th Avenue W/15th Avenue NW have limited signalized intersections and high traffic volumes; affects Smith Cove Station • Major freight route; affects Smith Cove Station • Proximity to industrial area with wide curb cuts/loading areas; affects Smith Cove Station • Helix Bridge near Smith Cove Station	High • 181 intersections within walksheds • 93% of sidewalk/trail miles to total roadway miles within walksheds • Elliott Avenue W/15th Avenue W/15th Avenue NW have limited signalized intersections and high traffic volumes; affects Smith Cove Station • Major freight route; affects Smith Cove Station • NW Market Street/15th Avenue NW is major intersection with bus, freight, and signal timing; affects Ballard Station • Proximity to industrial area with wide curb cuts/loading areas; affects Smith Cove Station • Helix Bridge near Smith Cove Station
Station Area Development Opportunities	Development potential	34% • 34% of parcels with redevelopment potential	34% • 34% of parcels with redevelopment potential	37% • 37% of parcels with redevelopment potential; alternative has more redevelopable land within walkshed, indicating the walkshed has more parcels that are underdeveloped (relative to current zoning and/or fewer parcels in uses that are unlikely to redevelop (such as parks, public facilities, churches, and condos)	35% • 35% of parcels with redevelopment potential
	Equitable development opportunities	Low • Limited opportunities near all three station locations	High • Greater opportunities near all three station locations, with more land potentially available for development	Low • Limited opportunities near all three station locations	Low • Limited opportunities near all three station locations

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.					
Environmental Effects	National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle City Landmarks	5	7	3	3
		• 5 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	• 7 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	• 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	• 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project
	Potential archaeological resources	Low	Low	Low	Low
		• 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites	• 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites	• 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites	• 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites
	Parks and recreational resources	0.2	0.8	0.9	0.9
		• Approximately 0.2 acre of permanent impact to 1 park: SW Queen Anne Greenbelt	• Approximately 0.8 acre of permanent impact to 4 parks: Interbay Golf Course, Interbay P-patch, Kinnear Park, and SW Queen Anne Greenbelt	• Approximately 0.9 acre of permanent impact to 2 parks: Centennial Park and Kinnear Park	• Approximately 0.9 acre of permanent impact to 2 parks: Centennial Park and Kinnear Park
	Water resources	0.7	0.6	0	0
		• More than 0.5 acre of permanent in-water impact	• More than 0.5 acre of permanent in-water impact	• No potential permanent in-water impacts	• No potential permanent in-water impacts
	Fish and wildlife habitat	11	11	0.5	0.5
		• Approximately 11 acres of permanent habitat impacts • Requires clearing in SW Queen Anne Greenbelt for construction and slope stabilization	• Approximately 11 acres of permanent habitat impacts • Requires clearing in SW Queen Anne Greenbelt for construction and slope stabilization	• Approximately 0.5 acres of permanent habitat impacts • Potential impact at Kinnear Park	• Approximately 0.5 acres of permanent habitat impacts • Potential impact at Kinnear Park
	Hazardous materials	11	15	11	11
		• Approximately 11 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	• Approximately 15 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	• Approximately 11 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	• Approximately 11 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel
	Visual	1.2	0.3	0.6	0.1
		• More than 1 mile elevated near sensitive viewers; no guideway would be higher than 75 feet in a visually sensitive area • Elevated along Elliott Avenue W for 0.6 mile and along west side of 15th Avenue NW, SEPA Scenic Routes • Passes over about 1,000 feet of Salmon Bay and would be viewed by water users	• Between 0.5 and 1 mile elevated near sensitive viewers; no guideway would be higher than 75 feet in a visually sensitive area • Elevated along Elliott Avenue W for 0.6 mile and along west side of 15th Avenue NW, SEPA • Passes over about 1,000 feet of Salmon Bay and would be viewed by water users	• Between 0.5 and 1 mile elevated near sensitive viewers; no guideway would be higher than 75 feet in a visually sensitive area • Crosses over Elliott Avenue W, under the Magnolia Bridge and over NW Market Street, SEPA Scenic Routes • Passes over about 500 feet of Salmon Bay and would be viewed by water users	• Less than 0.5 mile elevated near sensitive viewers; no guideway would be higher than 75 feet in a visually sensitive area • Would be elevated for about 300 feet in Kinnear Park • Crosses over Elliott Avenue W, a SEPA Scenic Route • Would not cross over Salmon Bay

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 1 of 2)			
			ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Environmental Effects (continued)	Noise and vibration		High • Approximately 230 noise and vibration sensitive receivers within 350 feet of the alternative	High • Approximately 170 noise and vibration sensitive receivers within 350 feet of the alternative	Low • Approximately 700 noise and vibration sensitive receivers within 350 feet of the alternative	Medium • Approximately 470 noise and vibration sensitive receivers within 350 feet of the alternative
	Property acquisitions and displacements	Number of potentially affected properties	Medium • Between 55 and 80 parcels affected	Low • More than 80 parcels affected	Low • More than 80 parcels affected	High • Less than 55 parcels affected
		Number of potential residential unit displacements	High • Less than 100 potential residential unit displacements • Displacements would primarily occur for elevated guideway on Elliott Avenue W	Low • More than 300 potential residential unit displacements • Displacements would primarily occur for elevated guideway on Elliott Avenue W, for the Interbay Station, and for the elevated guideway and Ballard Station	Low • More than 300 potential residential unit displacements • Displacements would primarily occur for Ballard Station and tail track	Medium • Between 100 and 300 potential residential unit displacements • Displacements would primarily occur on Elliott Avenue W for elevated guideway and Ballard Station
		Square feet of potential business displacements	Medium • Between 375,000 and 650,000 square feet of potential business displacements • Displacements would primarily occur on Elliott Avenue W and in Ballard for elevated guideway and stations	Medium • Between 375,000 and 650,000 square feet of potential business displacements • Displacements would primarily occur on Elliott Avenue W and in Ballard for elevated guideway and stations	Medium • Between 375,000 and 650,000 square feet of potential business displacements • Displacements would primarily occur on Elliott Avenue W, in North Interbay, and in Ballard for elevated guideway and stations	High • Less than 375,000 square feet of potential business displacements • Displacements would primarily occur on Elliott Avenue W for elevated guideway and Ballard Station
	Construction impacts		Low • Would be most disruptive to greater Interbay and Ballard neighborhoods • Potential for visual, noise and vibration impacts on residences on or near Elliott Avenue W, 15th Avenue W, 15th Avenue NW and NW Market Street • Potential for traffic impacts on Elliott Avenue W, 15th Avenue W, and 15th Avenue NW, which are principal arterials and major freight routes that carry about 35,000 to 50,000 vehicles a day; diversion of these vehicles could create traffic impacts on other roadways • Access to businesses would be maintained, although the community may experience changes in access to some businesses	Medium • Potential for visual, noise and vibration impacts on residences on or near Elliott Avenue W, 15th Avenue W, 15th Avenue NW and NW Market Street from elevated guideway and station construction • Potential for traffic impacts on Elliott Avenue W, 15th Avenue W, and 15th Avenue NW, which are principal arterials and major freight routes that carry about 35,000 to 50,000 vehicles a day; diversion of these vehicles could create traffic impacts on other roadways • Traffic impacts would be reduced compared to ST3 Representative Project because the guideway and stations would mostly be located outside of the right-of-way • Access to businesses would be maintained, although the community may experience changes in access to some businesses	Low • Potential for visual, noise and vibration impacts on residences on or near 20th Avenue W, 15th Avenue NW and 17th Avenue NW from elevated guideway, bridge and station construction • Would be most disruptive to "core" of Ballard (west of 15th Avenue NW) • Potential for traffic impacts on 20th Avenue W, which carries about 7,000 vehicles a day; diversion of these vehicles could create traffic impacts on other roadways • Construction of the Ballard Station between 17th Avenue NW and 15th Avenue NW and the Ballard Station would have temporary traffic impacts on the primary Ballard business district • Access to businesses would be maintained, although the community may experience changes in access to some businesses	Medium • Potential for visual, noise and vibration impacts on residences on or near 20th Avenue W, 15th Avenue NW and 17th Avenue NW from elevated guideway, bridge and station construction • Would be most disruptive to "core" of Ballard (west of 15th Avenue NW) • Potential for traffic impacts on 20th Avenue W, which carries about 7,000 vehicles a day; diversion of these vehicles could create traffic impacts on other roadways • Construction of the Ballard Station between 17th Avenue NW and 15th Avenue NW and the Ballard Station would have temporary traffic impacts on the primary Ballard business district • Access to businesses would be maintained, although the community may experience changes in access to some businesses

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Environmental Effects (continued)	Burden on minority and low-income populations	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk
Traffic Operations	Traffic circulation and access	Low • Right-of-way impacts on Elliott Avenue W, 15th Avenue W, and 15th Avenue NW (all high volume streets) • Left turn restrictions for most parcels along Elliott Avenue W and 15th Avenue W where the guideway is in the right-of-way	Medium • Right-of-way impacts to Elliott Avenue W (high volume roadway) • Left turn restrictions for most parcels along Elliott Avenue W where the guideway is in the right-of-way	Medium • Right-of-way impacts on 17th Avenue NW	High • Limited or no permanent roadway or property access impacts
Traffic Operations	Transportation facilities	Medium • Transportation facilities affected include Elliott Avenue W/15th Avenue W, W Dravus Street, W Emerson Street interchange and 15th Avenue NW/ NW Market Street intersection	High • Transportation facilities affected include Elliott Avenue W/15th Avenue W and 15th Avenue NW/NW Market Street intersection	Low • Transportation facilities affected include Helix pedestrian bridge, W Dravus Street, Elliott Bay Trail, Magnolia Connector Trail, 20th Avenue W Improvements, 17th Avenue NW and NW Market Street	Medium • Transportation facilities affected include Helix pedestrian bridge, W Dravus Street, Elliott Bay Trail, Magnolia Connector Trail and 20th Avenue W Improvements
Economic Effects	Freight movement and access on land and water	Low • Construction would have temporary capacity impacts on 15th Avenue W • Columns in center roadway could affect long term traffic capacity associated with traffic spill-over from center turn lane into general lanes on 15th Avenue W; columns could affect queue lengths for left turn movements at minor intersections; columns would be placed to not affect left-turns onto Mercer Place • Temporary and permanent impacts to FVO operations and Dock 3 at Fishermen's Terminal are expected • Need to coordinate with BNSF during construction for crossing tracks near Ballard Bridge • Columns would maintain Ship Canal navigation channel, but could affect large vessel turning access movement to FVO/Fishermen's Terminal • Could remove center turn lane on 15th Avenue NW from NW 51st Street to NW 57th Street	Medium • Alignment on east side of Elliott Avenue W would avoid impacts to vehicle capacity on corridor and reduce construction impacts compared to ST3 Representative Project • Alignment on west side of 15th Avenue W with columns out of roadway not anticipated to affect long-term vehicle capacity on corridor; may experience traffic capacity impacts during construction, including at W Dravus Street interchange • Temporary and permanent impacts to FVO operations and Dock 3 at Fishermen's Terminal are expected • Need to coordinate with BNSF during construction for crossing tracks near Ballard Bridge • Fewer columns in water compared to movable bridges • Could remove center turn lane on 15th Avenue NW from NW Market Street to NW 57th Street	Medium • Crossing of BNSF tracks at Galer Street limited to temporary construction period impacts • Potential for construction period impacts near Terminal 91 access gate • Construction on west side of BNSF Balmer yard, would not preclude future spur tracks to Terminal 91 • Elevated crossing of Interbay BNSF railyard would span tracks • Maintains vehicle capacity on 20th Avenue W and W Dravus Street • Potential road relocation at 21st Avenue W and W Commodore Way to accommodate bridge column • Avoids permanent in-water columns, but may have construction period impacts to vessel movements • Avoids 15th Avenue W and 15th Avenue NW	Medium • Crossing of BNSF tracks at Galer Street limited to temporary construction period impacts • Potential for construction period impacts near Terminal 91 access gate • Construction on west side of Interbay BNSF yard, would not preclude future spur tracks to Terminal 91 • Temporary closure of W Dravus Street Bridge over railroad yard to construct undercrossing; would have detour impacts to other freight routes including W Emerson Street • Temporary closures of 20th Avenue W between W Dravus Street and W Bertona Street for tunnel portal

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 1 of 2)			
		ST3 Representative Project	15th/Fixed Bridge/15th	20th/Fixed Bridge/17th	20th/Tunnel/15th
Economic Effects (continued)	Business and commerce effects	Low • Moderate amount of business displacement compared to other Interbay/Ballard alternatives • Could displace FVO Fishermen's Terminal and Dock 3, which would reduce available moorage for fishing vessels • Could displace a small marina and multiple small businesses on the north side of Salmon Bay • Could displace several small businesses on Elliott Avenue W and 15th Avenue NW • Construction traffic impacts on freight movement on Elliott Avenue W, 15th Avenue W, W Dravus Street, W Emerson Place, and 15th Avenue NW and smaller businesses along these streets	Low • Moderate amount of business displacement compared to other Interbay/Ballard alternatives • Could displace FVO at Fishermen's Terminal and limit operations of Dock 3 during construction, which would reduce available moorage for fishing vessels • Potential for indirect effects to businesses that rely on FVO • Could displace a small marina and multiple small businesses on the north side of Salmon Bay • Could displace several small businesses on Elliott Avenue W, 15th Avenue NW and the area west of 15th Avenue W and north of W Dravus Street • Construction traffic impacts on freight movement on Elliott Avenue W, 15th Avenue W, W Dravus Street, W Emerson Place, and 15th Avenue NW and smaller businesses along these streets	Medium • Moderate amount of business displacement compared to other Interbay/Ballard alternatives • Could avoid direct impacts to Fishermen's Terminal • Could displace some moorage at Salmon Bay Marina, Ballard Mill and Marina multiple small industrial businesses on the north side of Salmon Bay • Could displace several small businesses on Elliott Avenue W, but less than ST3 Representative Project and 15th/Fixed Bridge/15th Alternative • Would displace a similar number of small businesses on both sides of 15th Avenue NW as ST3 Representative Project and 15th/Fixed Bridge/15th Alternative • Construction traffic impacts on freight movement on Elliott Avenue W, W Dravus Street, W Emerson Place, and 15th Avenue NW and smaller businesses along these streets	High • Lowest amount of business displacement compared to other Interbay/Ballard alternatives • Tunnels could avoid impacts to maritime businesses including those at Fishermen's Terminal and marinas on Salmon Bay • Could displace several small businesses on Elliott Avenue W and 15th Avenue W, but less than ST3 Representative Project and 15th/Fixed Bridge/15th Alternative, and would displace fewer small businesses in Ballard • Construction traffic impacts on freight movement on Elliott Avenue W and W Dravus Street and smaller businesses along these streets, but would avoid impacts to W Emerson Place and 15th Avenue NW

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.					
Reliable Service	Potential service interruptions and recoverability	Low • Bridge openings would interrupt LRT operations • Restrictions to limit bridge openings during peak travel hours could be implemented, but the bridge could still be opened if requested from large ships of a certain size; it is unclear when and how often this could occur, but recoverability of LRT operations could be challenging	High • Fully grade separated	High • Fully grade separated	High • Fully grade separated
Travel Times	LRT travel times	5 to 6 • Estimated 5 to 6 minute travel time measured from Smith Cove Station to Ballard Station • Assumed the starting Smith Cove Station point is near the ST3 Representative location for comparison • A speed reduction was assumed for crossing movable bridge • All alternatives have similar travel times	5 to 6 • Estimated 5 to 6 minute travel time measured from Smith Cove Station to Ballard Station • All alternatives have similar travel times	5 to 6 • Estimated 5 to 6 minute travel time measured from Smith Cove Station to Ballard Station • Assumed the starting Smith Cove Station point is near the ST3 Representative location for comparison • All alternatives have similar travel times	5 to 6 • Estimated 5 to 6 minute travel time measured from Smith Cove Station to Ballard Station • Assumed the starting Smith Cove Station point is near the ST3 Representative location for comparison • All alternatives have similar travel times
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand.					
Regional Connectivity	LRT network integration	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity	Medium • Facilitates regional connectivity
Transit Capacity	Passenger carrying capacity in downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown	Medium • Does not preclude new light rail tunnel through downtown
Projected Transit Demand	Ridership potential	15,400 • Approximately 15,400 forecasted population and employment within 10-minute walkshed of stations 8% lower than segment average due to the Ballard Station location on 14th Avenue NW further from the center of Ballard hub urban village	16,400 • Approximately 16,400 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average	15,400 • Approximately 15,400 forecasted population and employment within 10-minute walkshed of stations 8% lower than segment average due to the Ballard Station location on 14th Avenue NW further from the center of Ballard hub urban village	16,500 • Approximately 16,500 forecasted population and employment within 10-minute walkshed of stations within 5% of segment average
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Regional Transit Long-Range Plan.					
Regional Centers Served	Station proximity to PSRC-designated regional growth centers	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment	N/A • No regional growth centers in segment
	Station proximity to PSRC-designated manufacturing/industrial centers	1 • All stations located in Ballard-Interbay manufacturing/industrial center	1 • All stations located in Ballard-Interbay manufacturing/industrial center	1 • All stations located in Ballard-Interbay manufacturing/industrial center	1 • All stations located in Ballard-Interbay manufacturing/industrial center

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Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Medium • Elevated station on a north-south alignment straddling NW Market Street; tail track north-south • A connected eastward extension per Long-Range Plan is feasible and includes surface disruptions; an independent extension is also feasible with potentially less surface disruption compared to connected extension	High • Station on a north-south alignment at NW Market Street; tail track north-south or east-west • A connected eastward extension per Long-Range Plan is more feasible and direct with potentially less surface disruption; an independent extension is also feasible	Medium • Elevated station on a north-south alignment straddling NW Market Street; tail track north-south • A connected eastward extension per Long-Range Plan is feasible and includes surface disruptions; an independent extension is also feasible with potentially less surface disruption compared to connected extension	High • Station on a north-south alignment straddling NW Market Street; tail track north-south or east-west • A connected eastward extension per Long-Range Plan is more feasible and direct with potentially less surface disruptions; an independent extension is also feasible
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.					
ST3 Consistency	Mode, route and general station locations per ST3	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan	High • Mode, route and general station locations consistent with ST3 Plan
	Potential ST3 implementation schedule effects	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan	High • Implementation schedule anticipated to be similar to ST3 Plan
	Potential ST3 operating plan effects	Low • Movable bridge degrades system operations due to system reliability effects and potential need for turnback operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations	High • Facilitates special trackwork and provides reliable system operations
Technical Feasibility	Engineering constraints	High • Long section of at grade guideway • Potential long spans over existing interchanges • Coordination with King County Wastewater for potential protection of 96-inch-diameter CS • Coordination with maritime properties for column placements and vessel movements • Coordination with city of Seattle for landfill under the Golf Course • Movable bridge in a high seismic zone • Potential relocation of existing King County Pump Station • Potential reconstruction of existing Magnolia bridge between BNSF and pump station • Potential for over excavation and ground improvements along guideway between Magnolia bridge and W Dravus Street bridge • Would need to maintain access to the waterway from the 14th Avenue NW Boat Ramp • Potential constraints for bridge column placement from large diameter utilities under Shilshole Avenue, and public park in 14th Avenue NW	Low • Coordination with King County Waste Water for protection of 96-inch-diameter CS • Coordination with city of Seattle for landfill under the Golf Course • Potential ground improvements in vicinity of tunnel portal and under 15th Avenue W • Deeper tunnel and Ballard Station to clear under large diameter planned SPU storage tunnel under Shilshole Avenue • Would need to maintain access to properties along Thorndyke Avenue W • Revised access to properties along W Armory Way • Potential for reconstruction of one span of Nickerson Street bridge over 15th Avenue W designed to current seismic standards • Landslide hazard along hillside may require walls with tiebacks	High • Long section of at grade guideway • Potential long spans over existing interchanges • Coordination with maritime properties for column placements and vessel movements • Coordination with King County Wastewater for potential protection of 96-inch-diameter CS • Coordination with city of Seattle for landfill under the Golf Course • Potential relocation of existing King County Pump Station • Potential reconstruction of existing Magnolia bridge between BNSF and pump station • Potential for over excavation and ground improvements along guideway between Magnolia bridge and W Dravus Street bridge • Would need to maintain access to the waterway from the 14th Avenue NW Boat Ramp • Potential constraints for bridge column placement from large diameter utilities under Shilshole Avenue, and public park in 14th Avenue NW	Low • Long section of at grade guideway • Coordination with city of Seattle for landfill under the Golf Course, and W Dravus Street bridge • Coordination with King County Wastewater for potential relocation and protection of 96-inch-diameter CS • Potential relocation of existing King County Pump Station • Potential reconstruction of existing Magnolia bridge between BNSF and pump station • Potential for over excavation and ground improvements along guideway between Magnolia bridge and W Dravus Street bridge • Would need to maintain access to properties along Thorndyke Avenue W post construction • Twin bore tunnel would require cross passages under Salmon Bay • Major utility constraints at Shilshole Avenue would require a deeper tunnel and Ballard Station • Reconstruction of W Dravus Street Bridge end spans would need to be designed to current seismic standards

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 2 of 2)			
			Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Technical Feasibility (continued)	Constructability issues		High • At grade guideway construction potentially less challenging • Coordination with King County Wastewater for relocation of existing Pump Station • Potential settlement monitoring during construction adjacent to the 96-inch-diameter CS • Excavation and disposal of potentially contaminated soils in the landfill under the golf course • Potential challenges for construction of bridges over existing infrastructure bridges, active roadways, railroads and Salmon Bay • In-water construction activities for multiple piers would need to take into account vessel traffic in the navigation channel and fish windows • Limited construction staging and laydown areas on both sides of Salmon Bay • Potential utility relocations in 14th Avenue NW	Low • Potential settlement monitoring during construction adjacent to the 96-inch-diameter CS • Excavation and disposal of potentially contaminated soils in the landfill under the golf course • Maintain access to properties along Thorndyke Avenue W during construction • Maintenance of traffic challenges for the phased construction of Nickerson Street bridge and Ballard Station • Potential challenges identifying muck hauling routes time of day requirements • Construction of cross passages under water may be challenging	High • At grade guideway construction potentially less challenging • Coordination with King County Wastewater for relocation of existing Pump Station • Potential settlement monitoring during construction adjacent to the 96-inch-diameter CS • Excavation and disposal of potentially contaminated soils in the landfill under the golf course • Potential challenges and longer duration for construction of long span and taller bridges over existing infrastructure bridges, active roadways, railroads and Salmon Bay • In-water construction activities would need to take into account vessel traffic in the navigation channel and fish windows • Limited construction staging and laydown areas on both sides of Salmon Bay • Potential utility relocations in 14th Avenue NW	Low • At grade guideway construction potentially less challenging • Coordination with King County Wastewater for relocation of existing Pump Station • Potential settlement monitoring during construction adjacent to the 96-inch-diameter CS • Excavation and disposal of potentially contaminated soils in the landfill under the golf course • Potential maintenance of traffic challenges for phased reconstruction of W Dravus Street bridge end spans • Maintain access to properties along Thorndyke Avenue W during construction • Potential challenges identifying muck hauling routes time of day requirements • Construction of cross passages under water may be challenging
	Operational constraints		Low • Movable bridge openings would have an impact on systemwide operations • Design speeds maintained for horizontal and vertical geometry of route alignment	High • Tunnel would not require openings for vessel traffic • Design speeds maintained for horizontal and vertical geometry of route alignment	High • Fixed bridge would not require openings for vessel traffic • Design speeds maintained for horizontal and vertical geometry of route alignment	High • Tunnel would not require openings for vessel traffic • Design speeds maintained for horizontal and vertical geometry of route alignment
Financial Sustainability	Conceptual capital cost comparison		$200 million increase • Approximately $200 million more than the ST3 Representative Project	$300 million increase • Approximately $300 million more than the ST3 Representative Project • Tunnel costs not included in ST3 financial plan or evaluation methodology	$100 million increase • Approximately $100 million more than the ST3 Representative Project	$500 million increase • Approximately $500 million more than the ST3 Representative Project • Tunnel costs not included in ST3 financial plan or evaluation methodology
	Operating cost impacts		Medium • Mixture of vertical profile types and Salmon Bay crossing type in this alternative would have comparable operating cost impacts as other alternatives	Medium • Mixture of vertical profile types and Salmon Bay crossing type in this alternative would have comparable operating cost impacts as other alternatives	Medium • Mixture of vertical profile types and Salmon Bay crossing type in this alternative would have comparable operating cost impacts as other alternatives	Medium • Mixture of vertical profile types and Salmon Bay crossing type in this alternative would have comparable operating cost impacts as other alternatives
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.						
Historically Underserved Populations	Opportunities for low-income and minority populations	Assessment of improved access to opportunities	Medium • Stations are not located in areas of higher than average historically underserved populations (minority, low-income, LEP, elderly, youth or disabled) • Access to about 25 activity nodes would be improved for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	Medium • Stations are not located in areas of higher than average historically underserved populations (minority, low-income, LEP, elderly, youth or disabled) • Access to about 25 activity nodes would be improved for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	Medium • Stations are not located in areas of higher than average historically underserved populations (minority, low-income, LEP, elderly, youth or disabled) • Access to about 25 activity nodes would be improved for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County	Medium • Stations are not located in areas of higher than average historically underserved populations (minority, low-income, LEP, elderly, youth or disabled) • Access to about 35 activity nodes would be improved for populations on the greater Link system, specifically for minority and low-income populations in South Seattle and South King County
		Percent of rent-restricted or subsidized rental units	8% • 8% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	8% • 8% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	8% • 8% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units	9% • 9% of housing units within 10-minute walkshed of stations are rent-restricted or subsidized rental units

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Historically Underserved Populations (continued)	Low-income population	19% / 18% • City average is 24% • Low-income population within 10-minute walkshed is 5% below city average • Low-income population within 15-minute rideshed is 6% below city average • Average household income for walksheds is $80,124, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.0, less than city average of 2.1	19% / 18% • City average is 24% • Low-income population within 10-minute walkshed is 5% below city average • Low-income population within 15-minute rideshed is 6% below city average • Average household income for walksheds is $80,124, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.0, less than city average of 2.1	19% / 18% • City average is 24% • Low-income population within 10-minute walkshed is 5% below city average • Low-income population within 15-minute rideshed is 6% below city average • Average household income for walksheds is $80,124, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.0, less than city average of 2.1	19% / 18% • City average is 24% • Low-income population within 10-minute walkshed is 5% below city average • Low-income population within 15-minute rideshed is 6% below city average • Average household income for walksheds is $80,124, which is greater than 80% of the Seattle Area Median Income for a 2-person household ($64,200) • Average household size for walksheds is 2.0, less than city average of 2.1
	Minority population	21% / 20% • City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 14% below city average	21% / 20% • City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 14% below city average	21% / 20% • City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 14% below city average	21% / 20% • City average is 34% • Minority population within 10-minute walkshed is 13% below city average • Minority population within 15-minute rideshed is 14% below city average
	Youth population (under 18)	12% / 12% • City average is 15% • Youth population within 10-minute walkshed is 3% below city average • Youth population within 15-minute rideshed is 3% below city average	11% / 12% • City average is 15% • Youth population within 10-minute walkshed is 4% below city average • Youth population within 15-minute rideshed is 3% below city average	12% / 12% • City average is 15% • Youth population within 10-minute walkshed is 3% below city average • Youth population within 15-minute rideshed is 3% below city average	10% / 12% • City average is 15% • Youth population within 10-minute walkshed is 5% below city average • Youth population within 15-minute rideshed is 3% below city average
	Elderly population (65 and over)	9% / 10% • City average is 12% • Elderly population within 10-minute walkshed is 3% below city average • Elderly population within 15-minute rideshed is 2% below city average	9% / 10% • City average is 12% • Elderly population within 10-minute walkshed is 3% below city average • Elderly population within 15-minute rideshed is 2% below city average	9% / 10% • City average is 12% • Elderly population within 10-minute walkshed is 3% below city average • Elderly population within 15-minute rideshed is 2% below city average	10% / 10% • City average is 12% • Elderly population within 10-minute walkshed is 2% below city average • Elderly population within 15-minute rideshed is 2% below city average
	Limited English Proficiency (LEP) population	3% / 3% • City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 5% below city average • Predominant languages spoken by LEP populations are Korean and Other Asian and Pacific Island languages	3% / 3% • City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 5% below city average • Predominant languages spoken by LEP populations are Korean and Spanish	3% / 3% • City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 5% below city average • Predominant languages spoken by LEP populations are Korean and Other Asian and Pacific Island languages	3% / 3% • City average is 8% • LEP population within 10-minute walkshed is 5% below city average • LEP population within 15-minute rideshed is 5% below city average • Predominant languages spoken by LEP populations are Korean and Other Asian and Pacific Island languages
	Disabled population	8% / 8% • City average is 9% • Disabled population within 10-minute walkshed is 1% below city average • Disabled population within 15-minute rideshed is 1% below city average	8% / 8% • City average is 9% • Disabled population within 10-minute walkshed is 1% below city average • Disabled population within 15-minute rideshed is 1% below city average	8% / 8% • City average is 9% • Disabled population within 10-minute walkshed is 1% below city average • Disabled population within 15-minute rideshed is 1% below city average	9% / 8% • City average is 9% • Disabled population within 10-minute walkshed is the same as city average • Disabled population within 15-minute rideshed is 1% below city average

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	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.					
Station Area Land Use Plan Consistency	Compatibility with Seattle designated Urban Centers and Villages	26% • 26% percent of combined station walksheds within urban centers and villages • Ballard Station walkshed includes the least area of the Hub Urban Village compared to other alternative • There is also a small area of the Uptown Urban Center Village within the Smith Cove Station walkshed • Most of the walkshed within an Urban Village is at the Ballard Station	28% • 28% percent of combined station walksheds within urban centers and villages • Ballard Station walkshed includes the least area of the Hub Urban Village compared to other alternatives • There is also a small area of the Uptown Urban Center Village within the Smith Cove Station walkshed • Most of the walkshed within an Urban Village is at the Ballard Station	26% • 26% percent of combined station walksheds within urban centers and villages • Ballard Station walkshed includes the least area of the Hub Urban Village compared to other alternatives • There is also a small area of the Uptown Urban Center Village within the Smith Cove Station walkshed • Most of the walkshed within an Urban Village is at the Ballard Station	36% • 36% percent of combined station walksheds within urban centers and villages • Ballard Station walkshed includes the second most area of the Hub Urban Village compared to the other alternatives • There is also a small area of the Uptown Urban Center Village within the Smith Cove Station walkshed • Most of the walkshed within an Urban Village is at the Ballard Station
	Station locations consistent with current local land use plans	Medium • Expedia campus development at Smith Cove Station underway • Interbay Station would be located in area currently zoned Industrial • Ballard Station located on 14th Avenue NW is within Ballard Urban Design and Transportation Framework (2016) planning area; suggested commercial uses in this area	Medium • Expedia campus development at Smith Cove Station underway • Interbay Station would be located in area currently zoned Industrial • Ballard Station located on 14th Avenue NW is within Ballard Urban Design and Transportation Framework (2016) planning area; suggested commercial uses in this area	Medium • Expedia campus development at Smith Cove Station underway • Interbay Station would be located in area currently zoned Industrial • Ballard Station located on 14th Avenue NW is within Ballard Urban Design and Transportation Framework (2016) planning area; suggested commercial uses in this area	Medium • Expedia campus development at Smith Cove Station underway • Interbay Station would be located in area currently zoned Industrial • Recent planning efforts at Ballard Station include the Urban Design and Transportation Framework (2016) and a multimodal transportation plan (Move Ballard), both developed in anticipation of light rail
	Activity nodes served	24 • This alternative includes a station on the most eastern side of central Ballard of all alternatives; the walkshed provides access to less activity nodes (24) than other alternatives • This alternative includes access to medical centers in Ballard, the Queen Anne Greenbelt, and Interbay Playfield	23 • This alternative includes a station on the most eastern side of central Ballard of all alternatives; the walkshed provides access to less activity nodes (23) than other alternatives • This alternative includes access to medical centers in Ballard, the Queen Anne Greenbelt, and Interbay Playfield	24 • This alternative includes a station on the most eastern side of central Ballard of all alternatives; the walkshed provides access to less activity nodes (24) than other alternatives • This alternative includes access to medical centers in Ballard, the Queen Anne Greenbelt, and Interbay Playfield	35 • This alternative includes a station on the central/east side of central Ballard; the walkshed provides access to 35 activity nodes, including the Ballard Food Bank and Ballard Library • This alternative also includes access to medical centers in Ballard, the Queen Anne Greenbelt, and Interbay Playfield
Modal Integration	Passenger transfers	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones	Medium • Adequate passenger transfer opportunities • Station locations generally have space for drop-off/pick-up activity and adjacent bus zones
	Bus/rail and rail/rail integration	High • Good bus access at proposed stations; 87% of transit routes less than one block walk of stations • A few bus zones may be farther than a one block walk or require more than two signalized crossings at Smith Cove and Interbay stations • Good bus access for Ballard Station straddling both sides of Market Street NW and 14th Avenue NW	High • Good bus access at proposed stations; 85% of transit routes less than one block walk of stations • A few bus zones may be farther than a one block walk or require more than two signalized crossings at Smith Cove and Interbay stations • Good bus access for Ballard Station straddling both sides of Market Street NW and 14th Avenue NW	High • Good bus access at proposed stations; 87% of transit routes less than one block walk of stations • A few bus zones may be farther than a one block walk or require more than two signalized crossings at Smith Cove and Interbay stations • Good bus access for Ballard Station straddling both sides of Market Street NW and 14th Avenue NW	High • Good bus access at proposed stations; 88% of transit routes less than one block walk of stations • A few bus zones may be farther than a one block walk or require more than two signalized crossings at Smith Cove and Interbay stations • Good bus access for Ballard Station straddling both sides of Market Street NW

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	Lower performing	Medium performing	Higher performing

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Modal Integration (continued)	Bicycle accessibility	17%	19%	17%	18%
		• 17% of bicycle facility miles to roadway miles within bikeshed of stations; smallest bikeshed area is 4.6 square miles • Similar bike facilities as other segment alternatives	• 19% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 4.9 square miles • Similar bike facilities as other segment alternatives	• 17% of bicycle facility miles to roadway miles within bikeshed of stations; smallest bikeshed area is 4.6 square miles • Similar bike facilities as other segment alternatives	• 18% of bicycle facility miles to roadway miles within bikeshed of stations; bikeshed area is 4.7 square miles • Similar bike facilities as other segment alternatives
	Pedestrian and persons with limited mobility accessibility	Low	Medium	Low	Medium
		• 168 intersections within walksheds • 90% of sidewalk/trail miles to total roadway miles within walkshed • Elliott Avenue W/15th Avenue W/15th Avenue NW have limited signalized intersections and high traffic volumes; affects Smith Cove Station • Major freight route; affects Smith Cove and Ballard stations • Challenging intersections near Magnolia Bridge • Proximity to industrial area with wide curb cuts/loading areas; affects Interbay and Smith Cove stations	• 167 intersections within walksheds • 90% of sidewalk/trail miles to total roadway miles within walksheds • Elliott Avenue W/15th Avenue W/15th Avenue NW have limited signalized intersections and high traffic volumes; affects Smith Cove Station • Major freight route; affects Smith Cove and Ballard stations • Proximity to industrial area with wide curb cuts/loading areas; affects Interbay Station • Helix Bridge near Smith Cove Station	• 168 intersections within walksheds • 90% of sidewalk/trail miles to total roadway miles within walksheds • Elliott Avenue W/15th Avenue W/15th Avenue NW have limited signalized intersections and high traffic volumes; affects Smith Cove Station • Major freight route; affects Smith Cove and Ballard stations • Challenging intersections near Magnolia Bridge • Proximity to industrial area with wide curb cuts/loading areas; affects Interbay and Smith Cove stations	• 175 intersections within walksheds • 90% of sidewalk/trail miles to total roadway miles within walksheds • Elliott Avenue W/15th Avenue W/15th Avenue NW have limited signalized intersections and high traffic volumes; affects Ballard Station • Major freight route; affects Smith Cove and Ballard stations • NW Market Street/15th Avenue NW is major intersection with bus, freight, and signal timing; affects Ballard Station • Challenging intersections near Magnolia Bridge • Proximity to industrial area with wide curb cuts/loading areas; affects Interbay and Smith Cove stations
Station Area Development Opportunities	Development potential	33%	33%	33%	34%
		• 33% of parcels with redevelopment potential	• 33% of parcels with redevelopment potential	• 33% of parcels with redevelopment potential	• 34% of parcels with redevelopment potential
	Equitable development opportunities	Medium	Medium	Medium	High
		• Greater opportunities near the Smith Cove and Interbay stations	• Greater opportunities near the Smith Cove and Interbay stations	• Greater opportunities near the Smith Cove and Interbay stations	• Greatest opportunities near all three station locations
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.					
Environmental Effects	National Register of Historic Places (NRHP) listed or eligible historic properties and Seattle City Landmarks	3	2	3	3
		• 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	• 2 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	• 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project	• 3 NRHP-listed, NRHP-eligible and/or Seattle Landmark properties could be directly affected by the project
	Potential archaeological resources	Low	Low	Low	Low
		• 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites	• 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites	• 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites	• 100% of alternative is within Very High Risk or High Risk probability areas due to proximity to shorelines and historic development, and therefore, there is a high probability of encountering buried precontact and historic-era archaeological sites • Fill deposits known to be present in the region may have buried/preserved archaeological sites

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 2 of 2)			
			Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Environmental Effects (continued)	Parks and recreational resources		4.2 • Approximately 4.2 acres of permanent impacts to 4 parks: 14th Avenue NW Boat Ramp, Interbay Athletic Field, Interbay Golf Course, and Kinnear Park	3.9 • Approximately 3.9 acres of permanent impacts to 3 parks: Interbay Athletic Field, Interbay Golf Course, and SW Queen Anne Greenbelt	4.2 • Approximately 4.2 acres of permanent impacts to 4 parks: 14th Avenue NW Boat Ramp, Interbay Athletic Field, Interbay Golf Course, and Kinnear Park	3.9 • Approximately 3.9 acres of permanent impacts to 3 parks: Interbay Athletic Field, Interbay Golf Course, and Kinnear Park
	Water resources		0.7 • More than 0.5 acre of permanent in-water impact	0 • No potential permanent in-water impacts	0.4 • Less than 0.5 acre of permanent in-water impact	0 • No potential permanent in-water impacts
	Fish and wildlife habitat		0.5 • Approximately 0.5 acre of permanent habitat impacts • Potential impact at Kinnear Park	11.4 • Approximately 11.4 acres of permanent habitat impacts • Requires clearing in SW Queen Anne Greenbelt for construction and slope stabilization	0.5 • Approximately 0.5 acre of permanent habitat impacts • Potential impact at Kinnear Park	0.5 • Approximately 0.5 acre of permanent habitat impacts • Potential impact at Kinnear Park
	Hazardous materials		16 • Approximately 16 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	12 • Approximately 12 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	16 • Approximately 16 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel	12 • Approximately 12 contaminated sites of higher concern within the alternative footprint or within an intersecting parcel
	Visual		0.7 • Between 0.5 and 1 mile elevated near sensitive viewers; no guideway would be higher than 75 feet in a visually sensitive area • Crosses over Elliott Avenue W, under the Magnolia Bridge and over NW Market Street, SEPA Scenic Routes • Passes over about 700 feet of Salmon Bay and would be viewed by water users	0.8 • Between 0.5 and 1 mile elevated near sensitive viewers; no guideway would be higher than 75 feet in a visually sensitive area • Adjacent to Elliott Avenue W, a SEPA Scenic Route • Would not cross over Salmon Bay	0.7 • Between 0.5 and 1 mile elevated near sensitive viewers; no guideway would be higher than 75 feet in a visually sensitive area • Crosses over Elliott Avenue W, under the Magnolia Bridge and over NW Market Street, SEPA Scenic Routes • Passes over about 700 feet of Salmon Bay and would be viewed by water users	0.6 • Between 0.5 and 1 mile elevated near sensitive viewers; no guideway would be higher than 75 feet in a visually sensitive area • Crosses over Elliott Avenue W and under the Magnolia Bridge, a SEPA Scenic Route • Would not cross over Salmon Bay
	Noise and vibration		High • Approximately 130 noise and vibration sensitive receivers within 350 feet of the alternative	High • Approximately 180 noise and vibration sensitive receivers within 350 feet of the alternative	High • Approximately 130 noise and vibration sensitive receivers within 350 feet of the alternative	High • Approximately 40 noise and vibration sensitive receivers within 350 feet of the alternative
	Property acquisitions and displacements	Number of potentially affected properties	High • Less than 55 parcels affected	High • Less than 55 parcels affected	High • Less than 55 parcels affected	High • Less than 55 parcels affected
		Number of potential residential unit displacements	Medium • Between 100 and 300 potential residential unit displacements • Displacements would occur on North Queen Anne for bridge approach	High • Less than 100 potential residential unit displacements	Medium • Between 100 and 300 potential residential unit displacements • Displacements would occur on North Queen Anne for bridge approach	High • Less than 100 potential residential unit displacements

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Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures			Alternatives (Set 2 of 2)			
			Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Environmental Effects (continued)	Property acquisitions and displacements (continued)	Square feet of potential business displacements	Medium • Between 375,000 and 650,000 square feet of potential business displacements • Displacements would primarily occur on Elliott Avenue W and in Interbay for elevated guideway and stations	High • Less than 375,000 square feet of potential business displacements • Displacements would primarily occur on Elliott Avenue W for elevated guideway and in north Interbay for the Interbay Station	Medium • Between 375,000 and 650,000 square feet of potential business displacements • Displacements would primarily occur on Elliott Avenue W and in Interbay for elevated guideway and stations	Low • More than 650,000 square feet of potential business displacements • Displacements would primarily occur on Elliott Avenue W for elevated guideway, in north Interbay for the Interbay Station and for the Ballard Station
	Construction impacts		High • Potential for visual, noise and vibration impacts on residences near W Dravus Street (west of 15th Avenue W) and between 15th Avenue W and 14th Avenue W from station and elevated guideway construction • Traffic impacts on Elliott Avenue W and 15th Avenue W would be limited to where guideway construction crosses these roadways • Construction under the Magnolia Bridge could have temporary traffic impacts on the Interbay and Magnolia neighborhoods; diversion of these vehicles could create traffic impacts on other roadways • Construction of the elevated guideway on 14th Avenue NW would have reduced potential for traffic impacts compared to alternatives on 15th Avenue NW because it is a lower volume road, and lower potential for impacts on residences because residential density around 14th Avenue NW is lower than areas to the west • Access to businesses would be maintained, although the community may experience changes in access to some businesses	High • Would be least disruptive to Ballard neighborhood • Potential for visual, noise and vibration impacts on residences near W Dravus Street (west of 15th Avenue W) and between 15th Avenue W and 14th Avenue W from station and elevated guideway construction • Traffic impacts on Elliott Avenue W and 15th Avenue W would be limited to where guideway construction crosses these roadways • Construction of the tunnel on 14th Avenue NW would have reduced potential for traffic impacts compared to elevated alternatives and alternatives on 15th Avenue NW, and residential density around 14th Avenue NW is lower than areas to the west • Construction of the Ballard Station would have potential for visual, noise and vibration impacts for adjacent residences • Access to businesses would be maintained, although the community may experience changes in access to some businesses	High • Potential for visual, noise and vibration impacts on residences near W Dravus Street (west of 15th Avenue W) and between 15th Avenue W and 14th Avenue W from station and elevated guideway construction • Traffic impacts on Elliott Avenue W and 15th Avenue W would be limited to where guideway construction crosses these roadways • Construction under the Magnolia Bridge could have temporary traffic impacts on the Interbay and Magnolia neighborhoods; diversion of these vehicles could create traffic impacts on other roadways • Construction of the elevated guideway on 14th Avenue NW would have reduced potential for traffic impacts compared to alternatives on 15th Avenue NW because it is a lower volume road, and lower potential for impacts on residences because residential density around 14th Avenue NW is lower than areas to the west • Access to businesses would be maintained, although the community may experience changes in access to some businesses	Medium • Potential for visual, noise and vibration impacts on residences on or near W Dravus Street (west of 15th Avenue W), 15th Avenue NW and NW Market Street from elevated guideway and station construction • Potential for traffic impacts on 15th Avenue NW, which is a principal arterial and major freight route that carries about 35,000 to 50,000 vehicles a day; diversion of these vehicles could create traffic impacts on other roadways • Construction under the Magnolia Bridge could have temporary traffic impacts on the Interbay and Magnolia neighborhoods; diversion of these vehicles could create traffic impacts on other roadways • Access to businesses would be maintained, although the community may experience changes in access to some businesses
	Burden on minority and low-income populations		High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk	High • No impacts would occur in areas with minority or low-income populations above the city average • Stations located in areas of lower displacement risk
Traffic Operations	Traffic circulation and access		Medium • Right-of-way impacts to 14th Avenue NW (low/moderate volumes), with potential turn restrictions at non-signalized intersections	High • Impacts to Armory Way right-of-way (low volume street) and adjacent parcels	Medium • Right-of-way impacts to 14th Avenue NW (low/moderate volumes), with potential turn restrictions at non-signalized intersections	High • Limited or no permanent roadway or property access impacts
	Transportation facilities		Medium • Transportation facilities affected include Helix pedestrian bridge, Galer Street Flyover, Magnolia Bridge, W Armory Way Bridge, W Dravus Street, W Dravus Street/Thorndyke Avenue W and W Emerson Street interchange	High • Transportation facilities affected include W Armory Way, W Dravus Street, W Dravus Street/Thorndyke Avenue W and W Emerson Street interchange	Medium • Transportation facilities affected include Helix pedestrian bridge, Galer Street Flyover, Magnolia Bridge, W Armory Way Bridge, W Dravus Street, W Dravus Street/Thorndyke Avenue W and W Emerson Street interchange	Medium • Transportation facilities affected include Helix pedestrian bridge, Galer Street Flyover, Magnolia Bridge, W Armory Way Bridge, W Dravus Street, W Dravus Street/Thorndyke Avenue W and W Emerson Street interchange

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

The Level 2 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

Level 2 Alternatives Evaluation

Interbay/Ballard Segment

Purpose and Need / Evaluation Criteria / Measures		Alternatives (Set 2 of 2)			
		Central Interbay/Movable Bridge/14th	Armory Way/Tunnel/14th	Central Interbay/Fixed Bridge/14th	Central Interbay/Tunnel/15th
Economic Effects	Freight movement and access on land and water	Medium • Potential construction impacts on Elliott Avenue W limited to one elevated crossing location • Potential construction impacts on 15th Avenue W limited to one elevated crossing location • Construction adjacent to east side of BNSF lines west of Elliott Avenue W and on east side of Interbay BNSF yard • Potential full or partial closure of Magnolia Bridge during construction of undercrossing • Avoids direct impacts to Fishermen's Terminal • Columns would maintain Ship Canal navigation channel but could affect large vessel navigation to/from the Coastal Transportation and Maritime Academy/14th Avenue NW Boat Ramp area	High • Alignment on east side of Elliott Avenue W would avoid changes in circulation and construction impacts • Potential construction impacts on 15th Avenue W limited to one elevated crossing location • Avoids columns and in-water work in Salmon Bay • Avoids columns on 15th Avenue NW	Medium • Potential construction impacts on Elliott Avenue W limited to one elevated crossing location • Fewer columns in the water compared to movable bridge • Avoids columns on 15th Avenue NW • Potential full or partial closure of Magnolia Bridge during construction of undercrossing • Construction adjacent to east side of BNSF lines west of Elliott Avenue W and on east side of Interbay BNSF yard • Avoids direct impacts to Fishermen's Terminal • Columns would maintain Ship Canal navigation channel but could affect large vessel navigation to/from the Coastal Transportation and Maritime Academy/14th Avenue NW Boat Ramp area	High • Potential construction impacts on Elliott Avenue W limited to one elevated crossing location • Construction adjacent to east side of BNSF lines west of Elliott Avenue W and on east side of Interbay BNSF yard • Potential construction impacts on 15th Avenue W limited to one elevated crossing location • Avoids columns in water and impacts on Fishermen's Terminal • Avoids permanent impacts on 15th Avenue W and 15th Avenue NW • Potential full or partial closure of Magnolia Bridge during construction of undercrossing
	Business and commerce effects	Medium • Moderate amount of business displacement compared to other Interbay/Ballard alternatives • Would avoid impacts to Fishermen's Terminal, including FVO • Could displace at least one dock at Salmon Bay Terminals, which would reduce available moorage for fishing vessels • Could displace or affect operation of small businesses on the north side of Salmon Bay • Could displace several small businesses on Elliott Avenue W and the area west of 15th Avenue W and north of W Dravus Street • Likely fewer small business displacements in Ballard than other alternatives on 15th Avenue NW or 17th Avenue NW • Construction traffic impacts on freight movement on Elliott Avenue W, 15th Avenue W, W Dravus Street, W Emerson Place, and 14th Avenue NW and smaller businesses along these streets • Construction traffic impacts would be of shorter duration than ST3 Representative Project or 15th/Fixed Bridge/15th Alternative because the alignment would only cross 15th Avenue W at W Emerson Place	High • Second lowest amount of business displacement compared to other Interbay/Ballard alternatives • Tunnel could avoid maritime business impacts including those at Fishermen's Terminal, Salmon Bay Terminal, and smaller marinas • Could displace several small businesses on Elliott Avenue W and the area west of 15th Avenue W and north of W Dravus Street • Likely fewer small business displacements in Ballard than other alternatives on 15th Avenue NW or 17th Avenue NW • Construction traffic impacts on freight movement on Elliott Avenue W, 15th Avenue W, and W Dravus Street and smaller businesses along these streets • Construction traffic impacts on 15th Avenue W would be of shorter duration than ST3 Representative Project or 15th/Fixed Bridge/15th Alternative because the alignment would only cross 15th Avenue W at W Emerson Place at two locations • Construction of the cut-and-cover Ballard Station on 14th Avenue NW would affect traffic and small businesses nearby, but would be less than Central Interbay/Movable Bridge/14th and Central Interbay/Fixed Bridge/14th alternatives	Medium • Would have a moderate amount of business displacement compared to other Interbay/Ballard alternatives • Would avoid impacts to Fishermen's Terminal, including FVO • Could displace at least one dock at Salmon Bay Terminals, which would reduce available moorage for fishing vessels • Could displace or affect operation of small businesses on the north side of Salmon Bay; could displace several small businesses on Elliott Avenue W and the area west of 15th Avenue W and north of W Dravus Street • Likely fewer small business displacements in Ballard than other alternatives on 15th Avenue NW or 17th Avenue NW • Construction traffic impacts on freight movement on Elliott Avenue W, 15th Avenue W, W Dravus Street, W Emerson Place, and 14th Avenue NW and smaller businesses along these streets • Construction traffic impacts would be of shorter duration than ST3 or 15th/Fixed Bridge/15th because the alignment would only cross 15th Avenue W at W Emerson Place	Medium • Greatest amount of business displacement compared to other Interbay/Ballard alternatives • Tunnel could avoid maritime business impacts including those at Fishermen's Terminal, Salmon Bay Terminal, and smaller marinas • Could displace several small businesses on Elliott Avenue W and the area west of 15th Avenue W and north of W Dravus Street • Construction of the cut-and-cover Ballard Station on 15th Avenue NW would affect traffic and small businesses • Construction traffic impacts on freight movement on Elliott Avenue W, and W Dravus Street and smaller businesses along these streets

Notes:
1. N/A = Measure not applicable to this segment
2. Minority population is defined in U.S. DOT Updated Environmental Justice Order 5610.2(a) as persons belonging to any of the following groups: Black, Hispanic, Asian American, and American Indian and Alaska Native

Key to Rating	Alternative Performance		
	Lower performing	Medium performing	Higher performing

The Level 2 Alternatives Evaluation is based on limited conceptual design and intended to inform comparison of potential benefits and impacts between alternatives. Sound Transit will evaluate the potential effects of alternatives carried forward for environmental review in an Environmental Impact Statement.

APPENDIX F

Stakeholder Advisory Group
Meeting Summary (September 26, 2018)

West Seattle and Ballard Link Extensions
Stakeholder Advisory Group Meeting #9 – September 26, 2018
Meeting Summary

Agenda Item #1 – Welcome and introductions

Diane Adams, Facilitator, welcomed Stakeholder Advisory Group (SAG) members to the group's ninth meeting. She confirmed the agenda and stated the meeting's objective: reaching a recommendation on which of the Level 2 alternatives to advance to Level 3.

Agency directors, project leads and staff in attendance were:

- Don Billen, Executive Director of Planning, Environment and Project Development, Sound Transit
- Diane Adams, Facilitator
- Ron Endlich, Project Director, Sound Transit
- Stephen Mak, High Capacity Transit Development Manager, Sound Transit
- Kate Lichtenstein, Light Rail Development Manager, Sound Transit
- Sandra Fann, High Capacity Transit Development Manager, Sound Transit
- Leda Chahim, Government & Community Relations Manager, Sound Transit
- Carrie Avila Mooney, Government & Community Relations Manager, Sound Transit
- Jim Parsons, Consultant Project Manager, HNTB
- David Shelton, Central Segment Lead, HNTB
- Jeanne Krikawa, Station Area Planning Lead, The Underhill Company
- KaDeena Yerkan, External Engagement Lead, EnviroIssues
- Harrison Price, External Engagement, EnviroIssues
- Jenifer Chao, Department of Neighborhoods, City of Seattle

SAG members in attendance were:

- Andres Arjona, Community Representative – Ballard
- Brian King, Community Representative – West Seattle
- Bryce Yadon, Futurewise
- Deb Barker, Community Representative – West Seattle
- Erin Goodman, SODO Business Improvement Area
- Ginny Gilder, Force 10 Hoops/Seattle Storm
- Greg Nickels, Former Mayor of Seattle
- Hamilton Gardiner, West Seattle Chamber
- Jon Scholes, Downtown Seattle Association
- Katie Garrow, Martin Luther King Labor Council
- Kelsey Mesher, Transportation Choices Coalition
- Larry Yok, Community Representative – Chinatown-International District
- Maiko Winkler-Chin, Seattle Chinatown-International District Preservation & Development Authority
- Mike Stewart, Ballard Alliance
- Peter Schrappen, Northwest Marine Trade Association

- Robert Cardona, Community Representative – Uptown
- Scott Rusch, Fred Hutchinson Cancer Research Center
- Ron Sevart, Space Needle
- Steve Lewis, Alliance of People with disAbilities
- Walter Reese, Nucor Steel
- Warren Aakervik, Community Representative – Freight
- Willard Brown, Delridge Neighborhood Development Association

NOTE – the following SAG members were not in attendance:

- Becky Asencio, Seattle Public Schools
- Colleen Echohawk, Chief Seattle Club
- Dave Gering, Manufacturing Industrial Council
- Julia Park, Community Representative – Ballard
- Mark Nagle, Expedia
- Savitha Reddy Pathi, Wing Luke Museum of the Asian Pacific American Experience

Agenda Item #2 – Previous meeting summary

Diane noted that the meeting summary from the September 5 SAG meeting, which focused on analysis of the Level 2 alternatives, was included in members' packets.

Agenda Item #3 – Community engagement, equity and inclusion

Leda Chahim, Sound Transit, provided an update on ongoing and upcoming community engagement activities. She presented a summary of the external engagement for Level 2, June through September 2018. During those months, Sound Transit attended 64 community briefings and 11 festivals throughout the project area. The team also hosted three neighborhood forums and one online open house. Finally, Leda and Jenifer Chao, Department of Neighborhoods, discussed the Racial Equity Toolkit and shared that the findings from Level 2 data analysis and community engagement would be shared later in the presentation.

Agenda Item #4 – Level 2 recommendation discussions

Kate Lichtenstein, Sound Transit, gave a brief overview of the alternatives development process. She reiterated the goal of identifying a preferred alternative by April 2019 and reviewed information about financial constraints.

Following the update on the alternatives analysis process, Sound Transit staff presented the Level 2 alternatives. These presentations included a map of the alternatives, a summary table of the key findings, cost comparisons, schedule comparisons and common themes from public feedback. For Delridge and Chinatown-International District, the presentations included a summary of the RET evaluation. For additional details about each area and alternative, see the PowerPoint presentation.

Interbay / Ballard

Kate Lichtenstein, Sound Transit, presented the Level 2 alternatives, key findings and summary table for the below alternatives. See the PowerPoint presentation for additional details about each alternative and the analysis.

- ST3 Representative Project
- 15th/Fixed Bridge/15th
- 20th/Fixed Bridge/17th
- 20th/Tunnel/15th
- Armory Way/Tunnel/14th
- Central Interbay/Movable Bridge/14th
- Central Interbay/Fixed Bridge/14th
- Central Interbay/Tunnel/15th

Questions (Q) and comments (C) from SAG members, as well as answers (A) from Sound Transit staff, included the following:

General comments

- C: Suggest Sound Transit provide YouTube clips of movable bridges for visualization purposes.
- C: Table noted dislike of movable bridges, especially with representative project (see comments within Central Interbay/Fixed/14th subsection).
- Q: What are the impacts to Fishermen's Terminal with the alternatives just west of the Ballard Bridge?
  A: The bridge alternatives include columns in Fishermen's Terminal. The tunnel (Central Interbay/Tunnel/15th) may include ventilation or access shafts within Fishermen's Terminal.
- C: Seems like we need a tunnel and a bridge and to consider costs.
- C: I am not seeing a bridge that would work. I would rather have two tunnels. You really don't have cost certainty with the tunnels, so to throw a tunnel away doesn't make sense. There are too many unknowns; we're at less than 5 percent design.
- Q: Which Smith Cove station best serves Expedia?
  A: All the stations at Smith Cove serve Expedia. Some are closer to the Helix pedestrian bridge and some are closer to the Galer Street bridge. Both provide direct pedestrian access to the Expedia campus.
- Q: At Smith Cove, how would people get to the west side of 15th Avenue if the station is on the east side?
  A: They would cross 15th. In our outreach we have heard the importance of looking at improving access to all of the potential Smith Cove Station locations.
- C: An elevated alignment to the west of the Ballard Bridge would decimate Ballard and they're expensive. I recommend we do not carry them forward.
- C: I am most concerned about freeing up 15th Avenue for freight travel. I would prefer that Expedia be well served in order to get those cars off 15th.
- C: In Interbay, where is the most developable land? I think we should have one bridge option.
- C: 14th Avenue is a non-starter. I am concerned you'll lose industrial businesses.

- Q: What is the earthquake resiliency for tunnels and bridges?
  A: Design is done to withstand earthquakes.
- Q: Can we get rid of the representative project? I have concerns about it. There are heavy impacts to freight with the representative project.
- C: I hate the representative project because of the movable bridge.
- C: We need a refinement to mix and match the alternatives that combines Central Interbay/Tunnel/15th and Armory Way/tunnel/14th (pink) to maintain the preferred station locations.
- C: Table had concerns about Central Interbay/Tunnel/15th because of the impacts to Fishermen's terminal.
- C: I'm concerned about access to a station at 15th because of the additional access needs for buses.
- C: I have a strong dislike for the Smith Cove stations on the east side of 15th Avenue.
- C: Table noted that the Smith Cove station should focus on serving Expedia.
- C: Where would a station be near 15th Avenue? 14th Avenue makes more sense.

Armory Way/Tunnel/14th Ave (pink)

- C: I don't find 14th Avenue to make any sense because of the zoning and because that is not where the people are going / where the density is going. Part of it is industrial, and part is single-family zoning north of there. Anything 15th Avenue and west should be considered. I'm all for hybridization, but not on 14th Avenue.
- C: The tunnel alternatives are the most feasible and the two we support. The Armory Way/tunnel/14th (pink) needs to terminate west of 15th Avenue. A station on 14th Avenue doesn't make sense. It changes the character of industrial land - it will all go away. We need to serve a community that wants access to transit. Something more than the D line.
- C: Carry forward Armory Way/tunnel/14th with a Ballard station closer to 15th Ave.
- C: I'm concerned about taking the pink off because of the western Smith Cove station area.
- C: Table asked to combine Armory Way/tunnel/14th (pink) and Central Interbay/Fixed Bridge/14th (light brown). Pink north of Interbay, light brown south of Interbay.

20th/Tunnel/15th (dark blue)

- C: I vote to eliminate the dark blue alignment due to cost concerns.

Central Interbay/Fixed Bridge/14th (light brown)

- C: I'm interested in keeping Central Interbay/Fixed Bridge/14th Ave (light brown). I understand it's a fixed bridge and on 14th Avenue, but I'm intrigued by the fewer properties affected. I don't think 14th Avenue is bad, it's behind the Safeway and McDonalds - there's a huge right of way and a big parking lot.
  - C: I support this.
- C: My concerns with Central Interbay Fixed Bridge:
  - Station location is on periphery of the hub urban village
  - TOD at 14th Ave NW will have a dramatic and permanent effect on industrial/maritime lands and uses
  - Harms ability for future route extension to the UW

  - Construction effects on maritime businesses
  - Detrimental to neighborhood character
  - Inefficient connection to existing transit
  - Unfavorable ridership numbers and walkshed
- C: I'm concerned about a bridge over Fishermen's Terminal. What happens to maritime businesses? You can't move them someplace else. If we have a bridge option, I'd like it to be on 14th Avenue. A bridge over Fishermen's Terminal is concerning.
- C: I like the light brown until Smith Cove. I would want a station in Smith Cove to be moved south.

Central Interbay/Movable Bridge/14th (light blue)
- C: I think we should eliminate anything with a movable bridge.
- C: I don't like the light blue alignment.

15th Ave/Fixed Bridge/15th (dark purple)
- C: I'm not a fan of dark purple alignment because of the disruption to the maritime industry.
- C: Take off 15th Avenue because of the impacts to the freight corridor.

Central Interbay/Tunnel/15th (dark brown)
- C: I support the dark brown alignment.
- C: I support tunnel options, but I'm nervous about comparing one tunnel to another. Later, we can take a closer look and have a conversation about tunnel options.

20th/Fixed Bridge/17th (orange)
- Q: I propose Dravus in Magnolia. What was the feedback from Magnolia?
  A: We have heard from some Magnolia stakeholders who support a station at 20th Ave W. Some commenters have also recognized that a station in central Interbay (at 17th Ave W) helps provide access for both Magnolia and Queen Anne.
- C: The consensus from the community is that Smith Cove/Interbay isn't serviced. None of these lines provide easy access to Queen Anne residents unless Metro provides circulator service to these stations.
- C: I think we should remove the orange alignment.

Downtown

Ron Endlich, Sound Transit, presented the Level 2 alternatives, key findings and summary table for the below alternatives. See the PowerPoint presentation for additional details about each alternative and the analysis.

- ST3 Representative Project
- 5th/Harrison
- 5th/Terry/Roy/Mercer
- 6th/Boren/Roy

Questions (Q) and comments (C) from SAG members, as well as answers (A) from Sound Transit staff, included the following:

General comments
- Q: Which alignment has the most ridership?
  A: They are all comparable in the Level 2 evaluation.
- Q: How deep is the Key Arena excavation?
  A: About 60 feet. We would have to tunnel below it.
- Q: How close would the 6th Avenue station be to the existing Westlake Station? Would both of the new Westlake Station locations provide access to the existing Westlake Station?
  A: Yes, there would be underground access between the new and existing stations.
- C: The Seattle Center station in the ST3 representative project (green) is at a good location.
- Q: Why can't 5th/Harrison (blue) go under 6th Avenue?
  A: It can in the next phase.
- C: Would the station at Mercer Street be in the middle of the street? If yes, I'm concerned about the impacts to freight.

6th/Boren/Roy (purple)
- C: The purple alignment is my least favorite. It's too far out and you have to cross Mercer Street.
- C: I want to eliminate the dark purple. The Boren station is up a hill from Westlake Avenue, very inaccessible. 6th Avenue is also up a hill from 5th Avenue and while 5th is easy to get to, 6th Avenue is not accessible and further from features of the area.

5th/Harrison (light blue)
- C: I like the station location, especially SR 99 integration with a good bus connection.
- Q: What about the Post Office, are they going to stay?
- C: Not known. But I don't think the building is going anywhere.
- C: To avoid going under Key Arena (citing cost concerns) turn on Republican Street near Seattle Center and have the light blue merge with the representative alignment at Republican Street.

5th/Terry/Roy/Mercer (brown)
- C: I would keep the 5th/Terry/Roy/Mercer alignment (brown) as is but explore alignments under 5th Avenue and 6th Avenue.
- C: Access is hard. To get to downtown, you'd have to go up a substantial hill from 5th Avenue to 6th Avenue. There's also a substantial hill from Westlake Avenue to Terry Avenue. Although Westlake Avenue is fairly accessible, Terry gets a bit difficult (near the Whole Foods).
- C: Compelled by the Mercer station location. That block (Mercer St/1st Ave/Queen Anne Ave/Republican St) has great TOD potential and we need that in Uptown.

Chinatown-International District

Ron Endlich, Sound Transit, presented the Level 2 alternatives, key findings and summary table for the below alternatives. Leda Chahim, Sound Transit, shared Level 2 RET findings for Chinatown-ID. See the PowerPoint presentation for additional details about each alternative and the analysis.

- ST3 Representative Project
- Surface E-3
- Massachusetts Tunnel Portal
- 5th Avenue Mined C-ID
- 4th Avenue Cut-and-Cover C-ID
- 4th Avenue Mined C-ID

Questions (Q) and comments (C) from SAG members, as well as answers (A) from Sound Transit staff, included the following:

General comments

- C: The south downtown organizations support the two 4th Avenue options. There is not much enthusiasm for the alignments on 5th Avenue and the representative project. The 5th Avenue options continue to push transit availability away from Pioneer Square, while the 4th Avenue options activate Union Station and tie many transportation options together. We are not concerned about a deep station because you could connect a mezzanine to the existing CID station. We recognize the cost is substantial, but the long-term benefit is worth it. The 5th Avenue alternatives just have too much disruption to CID neighborhood.
- Q: If we were to keep a 5th Avenue option, which one?
- C: Mined. You would lose businesses with a cut and cover.
- Q: What's the scale of an access shaft?
  A: Access would happen from the same staging area near 5th Avenue. It would be as big as the site would allow. A lot of materials would need to come in and out of the shaft.
- Q: Are mined stations deeper?
  A: Yes.
- C: I'm concerned about the depth of the minded stations.
- C: I wouldn't move the mined stations forward because of difficulties with transfers with a mined station.
- C: The SODO alternatives will dictate what happens in CID.
- C: There are challenges with the budget and schedule. I prefer cost-efficient options on 5th Avenue.
- C: I'm concerned about closing Royal Brougham and the impacts to the SODO station.
- C: Community groups have voiced their concerns about the impacts on 5th Avenue with a cut and cover station. We need to keep the neighborhood whole and make the station a hub.
- C: It's important to listen to the findings in the RET and voices from the community.
- C: I'm concerned about a station straddling Jackson.

4th Ave Cut-and-Cover CID (gold)

- C: The neighborhood wants 4th Avenue to move forward.
- Q: The cut-and-cover for 4th Avenue has impacts to a King County building, but isn't that getting torn down? What does this $600 million account for?
  A: The $600 million includes acquisition of property.
- Q: But if the King County building is being torn down…
  A: We would still acquire that property though, so there's still the cost of acquiring the property. King County is doing a master study right now to reduce their 8 blocks which includes this administration building.
- Q: Does the 4th Avenue viaduct need to be replaced?
  A: SDOT said there is no immediate plan to replace the viaduct, nor any funding. If we touch it and need to replace it, SDOT has stated they would not participate in funding through their bridge program.
- Q: Why a 4th Avenue cut and cover vs. a Surface E-3?
- C: Less impact to CID. It's further away from us.

4th Ave Mined CID (orange)

- C: I think we should eliminate it.
  - C: I agree.
- C: I have a problem with getting rid of everything on 4th Avenue. I want to keep one 4th option and one 5th option.
- C: I don't agree with removing anything on 4th Avenue because it doesn't leave the community with multiple options for 4th. Keep a second 4th Ave option for CID community to have to talk about because they want 4th Avenue.
- C: I'd put my money on a cut-and-cover over mined because of accessibility.
- C: If we're closing 4th anyways, why not do the construction work at the same time?
- Q: Does 4th Avenue Mined require fully rebuilding the viaduct?
  A: It includes a partial rebuild - You still need to dig a big access shaft above the station near the viaduct. This requires closing 4th Avenue for a period time, but does not replace the full viaduct structure.
- C: I've heard anything that happens to Ryerson would have unintended consequences in bus service cuts. There's no other substitute for Ryerson.
- Q: What would a Ryerson base displacement mean? Is the 4th Avenue mined the only alternative that impacts it?
  A: Ryerson would be needed for the tunnel portal for 4th Avenue Mined. It's assumed that we'd have to acquire the site and provide relocation costs to King County for a new site. It's an expensive component of that option. Yes, only 4th Avenue mined permanently displaces the entire Ryerson base.

Surface E-3 (shorter 5th Ave cut-and-cover tunnel) (purple)

- C: There will be impacts to the E-3 busway.
- A: Clarification, all alignments impact the E-3 busway.
- C: I can let go of this alignment.

- C: This is more of a comment about SODO/Stadium than CID, but a benefit of E-3 is that it would provide two stations at Stadium. And those stations provide direct access all the way to Tacoma and Everett without adding the obstacle of transfers for folks attending events in Stadium/SODO.

Massachusetts Tunnel Portal (5th Ave bored tunnel) (light blue)

- C: I like this alignment.
- Q: The Massachusetts Portal doesn't include a new station?
  A: It includes a cut-and-cover station on 5th Ave in the CID adjacent to the existing one.
- C: I want to note concerns with the trolley on 5th Avenue and impacting the Jackson/5th intersection.
- Q: How long is the station?
  A: Approximately 400-500 feet.
- Q: How would this function with construction?
  A: The length of surface street disruption associated with a cut-and-cover station is less than the representative project.

5th Ave Mined CID (magenta)

- C: I'm in favor of eliminating the magenta because of the depth (you'd have to use elevators/escalators).
- C: That's the one without cut-and-cover, least impactful to neighborhood. If I had to choose a 5th Avenue option to keep, I'd keep this one.

SODO

Ron Endlich, Sound Transit, presented the Level 2 alternatives, key findings and summary table for the below alternatives. See the PowerPoint presentation for additional details about each alternative and the analysis.

- ST3 Representative Project
- Surface E-3
- Massachusetts Tunnel Portal
- Occidental Avenue

Questions (Q) and comments (C) from SAG members, as well as answers (A) from Sound Transit staff, included the following:

General comments

- Q: Is the existing SODO station at Lander?
  A: The existing station is located approximately 200 feet north of Lander.
- Q: So, moving it further south would line it up with the post office area?
  A: Yes, and closer to Lander.
- C: I'm worried about accessibility.
- C: I don't know if I can say "yes" or "no" to any of them because of the newer alternatives proposed.

- C: There was a letter sent to Sound Transit and the Elected Leadership Group that rejects all the options. There are impacts to freight mobility and transit operations and these options do not service 47,000 employees. Bus service is not planned to be restored and Occidental Avenue has large impacts to businesses. There were additional options presented in SODO and connecting areas that would improve mobility in SODO. There could be refinements on the west side of BNSF that were recently presented as an additional option. We are frustrated with the choices on the table given the number of options that were presented at the agency meeting.
- C: I'm concerned about closing Royal Brougham
- C: I think the Surface E-3 and Massachusetts Portal Tunnel should carry forward.
- C: There are no plans to change the zoning in SODO. Always pressure to rezone.
- C: There are jobs in SODO that are not being served by the alternatives.
- C: Connections are not available in SODO. Restoring bus service on 1st Avenue S is a top priority. The community in SODO is not used to being heard. People would like to see more options.

Occidental Ave (dark blue)

- Q: The SODO BIA has substantial concerns about Occidental. They wanted something on the west side of the current alignment, but what's the definition of the west side?
- C: The Occidental alternative was a response to that statement.
- C: Freight mobility would be impacted by the Occidental alternative.
- C: From an organized labor perspective, the Occidental option is our least favorite because of the industrial impacts. We like Surface E-3 best. We would be fine with a Mass Portal tunnel.
- C: I would have eliminated the mined 5th Avenue station if I would have known it would mean no second Stadium station. I think most people would rather have a second Stadium station and cut and cover than having a bored tunnel and no second Stadium station.
- C: I think there's a lot of value in having an extra Stadium station.
- C: Aren't there freight mobility issues near Occidental? I think that's an issue.
- C: I like the new station here. Everything else in SODO area uses the same stations we already have. A new station here would afford greater access and is near the Starbucks and opens-up a substantial area.
- C: You have to remember that SODO/CID/Westlake are the only nexus points for Tacoma and Everett. I support Occidental but have concerns.
- C: You'll have to transfer at some point. You can't run a single line everywhere. I support Occidental with potential refinements at the Occidental station. Functionally, it's different to think about moving people in-and-out of stadiums (which is a good idea). But, are we trying to provide trips out of SODO day-to-day?
- C: I support having a west side alternative, which right now is Occidental.
- C: I get the value of putting a station on Lander. But it's only accessible for the Everett-West Seattle line. If anyone is coming from Ballard/Tacoma, they'd have to transfer somewhere else. I understand that for a large percentage of SODO employees, this station doesn't function for these folks. I'd carry it forward with a refinement that wherever the station is, that it is split between serving jobs on 1st Avenue and is a reasonable walkshed to Safeco Field.
- C: We need a refinement to address impacts to Ryerson.

- Q: I have freight mobility concerns with Occidental.
  A: If you want an alternative on west side that's not on Occidental, there are limited options. If it's on 1st Avenue or 4th Avenue, there would also be traffic/freight mobility impacts.
- C: I have cost concerns with the BSNF crossing. I also have concerns with an upzone that will occur and how it will negatively impact maritime businesses.
- Q: How many buses run on the E-3 busway?
  A: I don't have the number available, but it's quite a few; we are working with KC Metro on what future volumes are expected to be.

Surface E-3 (purple)

- Q: How does the purple alternative impact the E-3 busway?
  A: It would displace buses in the busway. None of the options completely avoid impacting the busway. The new station would be near the existing station, in the E-3 busway.
- C: I like the purple alternative.

Massachusetts Tunnel Portal (light blue)

- C: I vote to move the light blue line forward because it avoids Ryerson.

West Seattle / Duwamish

Stephen Mak, Sound Transit, presented the Level 2 alternatives, key findings and summary table for the below alternatives. Leda Chahim, Sound Transit, shared Level 2 RET findings for Delridge. See the PowerPoint presentation for additional details about each alternative and the analysis.

- ST3 Representative Project
- Pigeon Ridge/West Seattle Tunnel
- Oregon Street/Alaska Junction/Elevated
- Golf Course/Alaska Junction/Tunnel
- Oregon Street/Alaska Junction/Tunnel

Questions (Q) and comments (C) from SAG members, as well as answers (A) from Sound Transit staff, included the following:

General comments

- Q: In terms of service, why would we consider a north crossing versus a south crossing?
  A: It has to do with the properties you're impacting. If you're on the south side, there's concerns with the hug against the Pigeon Point hill (environmental and geotechnical factors). On the north side, you have the Port terminal property.
- Q: Terminal 5 is in process of a major redevelopment and we've invested a bunch of money into it. Do any of these lines impact Terminal 5's ability to recruit a tenant?
  A: For the brown alignment, we would need to place columns in the vicinity of the rail line and truck ramps that lead up to Terminal 5. If this is recommended to move forward, we would continue to study with the assistance of Port staff.
- C: I have concerns with the alternatives just south of the West Seattle Bridge. There would be major excavation and during construction there would be construction impacts to the West

Seattle Bridge exits and entrances. There is also a multi-use path along the lower West Seattle Bridge that could be impacted.

- C: Even if some alternatives are cheaper, they're going to disrupt more businesses which will cost more money in mitigation.
- C: In developing ST3, I wonder if there's any intention into looking at impacts and development options in West Seattle/Delridge like it's been done for other segments of the rail. Until we know those other cost evaluations, it's hard to make a decision on alignments.
- C: I have concerns about topography.
- C: Could a tunnel portal from the purple option be incorporated into another alternative.
- C: An elevated line into the Junction is a huge concern for the community.

Pigeon Ridge/West Seattle Tunnel (purple)

- C: The two lines that will impact Nucor are the Oregon Street/Alaska Junction/tunnel (brown) and Pigeon Ridge/West Seattle tunnel (purple). We think the brown line has greater impact. We could manage around the purple line, if chosen. We are not in favor of a brown line at all; we prefer the south side of the West Seattle Bridge. We also prefer a Delridge station south of SW Andover Street. I know the community members seem to like the blue Delridge station because of the potential for TOD and community amenities.
- C: The purple line is by far the best. Everyone I've talked to likes purple. This alternative is the least disruptive to Delridge. Of all the station locations in Delridge, the purple is the best. My second favorite is the blue station in Delridge. The rest would have substantial effects. The blue and purple alignments are also low on Genesee. For crossing the Duwamish, I recommend carrying and continuing to study a north and south alignment. The north alignment is cheaper.
- C: Pigeon Ridge was my original preferred route (before moving to amended light blue) because it takes you off Port property. It's the cleanest routing, very direct and gets you where you want to be with the lowest elevations once you get into West Seattle. We know it's costly, but it reduces impacts and is accessible.
  - C: I support this statement.
- C: I don't think the numbers (i.e. cost) should stop us from looking at other options that may have a better station location.
  - C: The better station location would be purple. Because it's the north end of Youngstown parking lot with potential to bring everything together.
- C: We cannot justify the purple line because of the large project price tag.
- C: There is strong support for the Pigeon Ridge/West Seattle Tunnel from the community because of the low community impacts and the low business impacts. A north line should be further explored, in addition to the purple line. Cost saving ideas could be part of the discussion for the purple line.
- C: I like the purple line because it supports Port industry.

Golf Course/Alaska Junction/Tunnel (blue)

- C: The Golf Course/Alaska Junction/tunnel alignment provides for something people use and can access and will bring people to community destinations. Hopeful for having as low a platform as

possible in Delridge so we can connect to Avalon station and then have a tunnel to the Junction. It makes no sense to put an elevated station in the Junction.

- C: For the Golf Course/Alaska Junction/tunnel, we could explore a slightly different station location in the Junction. Maybe something closer to the purple or brown station locations.
- C: Blue could go to 42nd rather than going to Fauntleroy. I suggest we move blue forward with a design refinement of the tunnel station on the purple (Pigeon/Tunnel) line at 42nd Avenue SW rather than Fauntleroy.
- Q: This adds a lot of money, what does it gain for the overall scheme?
- Q: Why like the purple tunnel (Junction station) as opposed to 44th Avenue SW?
  C: 44th is the backside of the Junction. And the zoning changes to mixed-use to single-family. So, it doesn't have the population base to serve. It's a great location, but the zoning drops off. You'd serve more people on 42nd/41st where the density is.
  C: I'd rather go to 44th than 42nd because that's where I spend my time.
- Q: What's the grade change between 44th and 42nd?
  C: Between California down to Fauntleroy, it's a hill. That's why the 41st/42nd was a nice choice because you already have mid-block connectors in the Junction and having a station at 41st/42nd would extend those midblock connectors to Fauntleroy.
- Q: How's the bus integration at 42nd?
  A: The further you get away from the Junction, the more challenging the transit integration gets.
- C: What about a refinement to keep the brown line crossing on the north side of the bridge, but the blue line stations?
- C: The blue line should move forward with the Junction station location refinement.

Oregon Street/Alaska Junction/Elevated (orange)

- C: The Oregon Street/Alaska Junction/elevated (orange) is terrible everywhere. It's very disruptive in the Junction area.
- C: They talked about lower performance with extensions south.
- C: Orange is bad because it runs into single-family zoned areas whether above or below.
- C: Going up Oregon is a very steep (~50 feet) and narrow street. You have the right of way that this would fill, but that'd be the entire street.
- C: Similar cost but looks better than ST3.
  - C: I agree, we've been trying to get rid of ST3.
- C: Eliminate elevated.
  - C: Agree to eliminate elevated.
- C: There's something about seeing an elevated light rail line speed by cars in traffic that would promote more rail ridership.
- C: The orange alignment should be carried forward with station on 41st or 42nd.
- C: I would want to carry forward the orange line because the ELG might kill the purple option and the orange looks better than the representative alignment. Plus, the proposed modifications to the representative project look a lot like the orange alignment. They'd support an Oregon refinement elevated along 41st or 42nd avenues.

Oregon Street/Alaska Junction/Tunnel (brown)

- Q: Does the Port think they can work with the brown alignment?

A: The Port has concerns about the brown alignment, especially during construction.

- C: A north crossing is challenging because of freight impacts and impacts to SODO.
- C: Brown also runs into single-family zoned areas (like orange).

Agenda Item #5 – Review group's recommendations

Diane Adams reviewed the completed recommendation worksheets for each segment which noted whether each alternative was recommended to be carried forward, as well as comments and notes from SAG members.

Interbay and Ballard

Alternative	Carry forward?	Comments
ST3 Representative Project		
Central Interbay / Fixed Bridge / 14th	Yes	Explore Ballard station access at 15th Ave NW closer to the center of the urban village.
Central Interbay / Movable Bridge / 14th	No	
15th / Fixed Bridge / 15th	No	
Armory Way / Tunnel / 14th	Yes	Explore Ballard station access at 15th Ave NW, closer to the center of the urban village.
Central Interbay / Tunnel / 15th	Yes	
20th / Fixed Bridge / 17th	No	
20th / Tunnel / 15th	No	

Downtown, South Lake Union and Seattle Center

Alternative	Carry forward	Comments
ST3 Representative Project		
5th / Harrison	Yes	With Seattle Center station located at Republican St.
6th / Boren / Roy	No	
5th / Terry / Roy / Mercer	Yes	With 6th Ave route through Downtown.

Chinatown-International District

Alternative	Carry forward	Comments
ST3 Representative Project		
Massachusetts Tunnel Portal	No	
Surface E-3	No	
4th Avenue Cut-and-Cover C-ID	Yes	
4th Avenue Mined C-ID	No	
5th Avenue Mined C-ID	Yes	

General discussion:

- Keep exploring 4th Avenue options.

SODO

Alternative	Carry forward	Comments
ST3 Representative Project		
Massachusetts Tunnel Portal	Yes	Explore shifting existing and new SODO stations closer to Lander
Surface E-3	No	
Occidental Avenue	Yes	

General discussion:

- Mix of opinions on Occidental Avenue alternative, continued interest in a western station location but concerns about freight effects and displacement of industrial businesses.
- Mix of opinions on Surface E-3. Interest in additional Stadium station location.
- Interest in improved bus connections to SODO station and concerns about loss of E-3 busway.

West Seattle and Duwamish

Alternative	Carry forward	Comments
ST3 Representative Project		
Pigeon Ridge / West Seattle Tunnel	Yes	
Oregon Street / Alaska Junction / Elevated	No	
Oregon Street / Alaska Junction / Tunnel	No	
Golf Course / Alaska Junction / Tunnel	Yes	Explore Junction Station location at 41st Ave SW/42nd Ave SW. Explore north crossing of Duwamish.

General discussion:

- Explore refining ST3 Representative Project by moving Delridge station further south and Alaska Junction east and oriented north/south
- Mix of opinions on Pigeon Ridge; strong concerns expressed about cost

Agenda Item #6 – Next steps and next meeting

Diane Adams closed the meeting and thanked the SAG members for attending. The next SAG meeting is being rescheduled for late October or early November. You'll see a Doodle poll from Leda.

APPENDIX G

Elected Leadership Group
Meeting Summary (October 5, 2018)

West Seattle and Ballard Link Extensions
Elected Leadership Group Meeting #4 – October 5, 2018
Meeting Notes

Agenda Item #1 – Welcome and Introductions

Seattle City Councilmember Mike O'Brien welcomed the Elected Leadership Group (ELG) members to the group's fourth meeting. He noted that the meeting would double as an official City of Seattle Sustainability and Transportation Committee meeting due to the number of Seattle City Council members in the room. King County Councilmember and Sound Transit Board member Joe McDermott gave an overview of the alternatives analysis process for the West Seattle and Ballard Link Extensions project, highlighting the public's involvement to-date and the recent neighborhood forum events. Councilmember McDermott stated the purpose of the meeting: to reach a recommendation on which Level 2 alternatives advance to Level 3 of the alternatives development process. Councilmember O'Brien highlighted the coordination between Sound Transit and the City of Seattle on the Racial Equity Toolkit (RET), which focuses on the project's impacts to communities of color and low-income populations. Lastly, he thanked Sound Transit, the Stakeholder Advisory Group (SAG) and the members of the ELG for their dedicated work throughout the process.

Peter Rogoff, Sound Transit CEO, welcomed ELG members and the audience. He noted the number of alternatives that were studied during Level 2 and the amount of work that was done to analyze those alternatives during this step in the process. He stated the overall goal of reaching a preferred alternative by April 2019 and stressed the importance of staying on-schedule to meet the timeline of the Sound Transit 3 (ST3) plan, approved by voters in 2016. Mr. Rogoff provided a high-level overview of the alternatives analysis process, including the role of the ST3 Representative Project for comparisons and the limits to cost estimates at this stage of the project given construction cost escalation and other unknowns about construction costs. He closed by identifying the Sound Transit Board as the body that would ultimately need to measure the benefits and costs in the context of the entire ST3 plan and thanking co-chairs McDermott and O'Brien for their opening remarks.

Agency directors, project leads and staff in attendance were:

- Peter Rogoff, Sound Transit CEO
- Cathal Ridge, Sound Transit
- Leda Chahim, Sound Transit
- Diane Adams, Facilitator

ELG members in attendance were:

- Executive Dave Somers, Sound Transit Board Chair
- Executive Dow Constantine, Sound Transit Board Member
- Mayor Jenny Durkan, Sound Transit Board Member
- Councilmember Rob Johnson, Sound Transit Board Member
- Councilmember Joe McDermott, Sound Transit Board Member
- Councilmember Sally Bagshaw, Seattle City Council
- Councilmember Lorena González, Seattle City Council

- Councilmember Bruce Harrell, Seattle City Council
- Councilmember Lisa Herbold, Seattle City Council
- Councilmember Mike O'Brien, Seattle City Council
- Commissioner Stephanie Bowman, Port of Seattle

Agenda Item #2 – Public Comment

Councilmember Mike O'Brien led the public comment period and noted that commenters would be allowed two minutes to speak. The Seattle Channel recorded and posted the meeting online to ensure visibility and documentation of the meeting.

Members of the public provided the following comments:

- One attendee, on behalf of Stand Up America, noted their concerns about the project cost and timeline, citing collusion between agencies and government. They shared concerns about the region's priorities, noting perceived conflicts between large transit infrastructure projects and affordable housing projects.
- One attendee noted that they were a property owner in West Seattle and had just learned the project could impact their home. They shared concerns about impacts to the Delridge neighborhood and potential impacts on property value for residents along the potential alignments. They requested that additional alignments be considered that do not significantly impact the Delridge neighborhood.
- One attendee, who serves on the SAG, encouraged the ELG to consider and adopt the SAG's recommendations. They stressed that until end-to-end alternatives and cost estimates are presented, the alternatives that provide the greatest benefits should move forward.
- One attendee shared concerns about the RET process because of the lack of adequate consideration for and outreach to underserved populations. They recapped recent events having to do with transit security and noted that the current situation for communities of color needs to be addressed.
- One attendee, who serves on the SAG and represents the Ballard Alliance, shared their preference for options that provide reliable and efficient options in the Salmon Bay area and that maximize connectivity in Ballard. They noted their support for a tunnel, as well as a station that is located near the center of the urban village in Ballard.
- One attendee commented on the Smith Cove station location. They suggested making the station a major transit hub by connecting light rail, Sounder, bus, and potentially a train to Bainbridge Island.
- One attendee, who represents the Northwest Maritime Trade Association, supported what was said earlier about the preferences in Ballard. They reiterated strong support for a tunnel crossing underneath Salmon Bay and noted concerns about the other crossing options.
- One attendee, on behalf of the Nordic Museum, suggested incorporating tourism as an additional consideration. They noted that the museum has had over 85,000 visitors in the five months since opening and that Ballard is an attractive place for residents, businesses and tourists, and will likely continue to be so once light rail serves the neighborhood.

Agenda Item #3 – Community Engagement, Equity and Inclusion

Leda Chahim, Sound Transit, provided an update on past, ongoing and upcoming community engagement efforts. She presented highlights from June through September 2018, including an overview of the recent neighborhood forums and associated online open house, community briefings and fairs and festivals Sound Transit attended throughout the summer. In addition, Sound Transit held a series of Station Area Planning Charrettes in neighborhoods along the project corridor to discuss how the future stations would fit into the existing neighborhoods and integrate with transit with community stakeholders and agency partners. Leda then introduced Jenifer Chao, City of Seattle Department of Neighborhoods, to cover the collaborative work Sound Transit and the City of Seattle have been doing with the RET to inform the alternatives development process. Jenifer presented a summary of the steps and processes involved with the RET and shared its relationship to Mayor Durkin's executive order reaffirming the City's commitment to the Race and Social Justice Initiative. As part of the RET process, the City of Seattle and Sound Transit developed the following shared outcomes for the project:

- Enhance mobility and access to create opportunity for communities of color and low-income populations.
- Create opportunities for equitable development that benefit communities of color.
- Avoid disproportionate adverse impacts on communities of color and for low-income populations.
- Meaningful involvement with communities of color and low-income populations.

Leda noted that the work on the RET focused on the Delridge and Chinatown-International District neighborhoods.

Agenda Item #4: Level 2 Recommendation Discussions

Diane Adams, facilitator, introduced Cathal Ridge, Sound Transit, to present an overview of the Level 2 alternatives, analyses and SAG recommendations.

Executive Dave Somers, Sound Transit Board, highlighted the importance of approaching the project holistically and with the context of the regional system in mind. He stated concerns about future ST3 projects not having adequate funding if additional funds are allocated for the projects scheduled to be completed first and requested keeping options on the table that are relatively close in cost to the ST3 Representative Project.

Cathal Ridge reviewed the alternatives development process and shared an overview of the Level 2 alternatives. His presentation included an overview of each alternative, a summary of the key findings, cost comparisons and schedule comparisons, common themes from public feedback and the SAG's recommendations. See the PowerPoint presentation for additional details about each alternative and the respective analyses.

Interbay and Ballard

- ST3 Representative Project
- 15th/Fixed Bridge/15th
- 20th/Fixed Bridge/17th
- 20th/Tunnel/15th
- Armory Way/Tunnel/14th

- Central Interbay/Movable Bridge/14th
- Central Interbay/Fixed Bridge/14th
- Central Interbay/Tunnel/15th

Questions (Q) and comments (C) from ELG members, as well as answers (A) from Sound Transit staff, included the following:

Q: Would the higher performing stations in terms of schedule be delivered ahead of 2030 in West Seattle and 2035 in Ballard?
A: Unless noted as lower performing in terms of schedule, all the alternatives are assumed to be able to be completed on the 2030 and 2035 timelines.

Q: How deep would the proposed tunnel be near 15th Ave NW?
A: The tunnel would be about 70 feet deep and 100 feet deep on 14th Ave NW and 15th Ave NW, respectively.

C: If the tunnel is on 14th Ave NW, there should be a station entrance on 15th Ave NW.

C: There is little to no community support for the alternatives that run along 15th Ave W due to potential impacts to vehicle traffic and freight mobility. The community has said loud and clear that they prefer a tunnel crossing under Salmon Bay over the bridge options.

C: If the Smith Cove station is north of Elliott Ave W, there should be a pedestrian bridge that connects to the south side of the street.

C: Taking into consideration the concerns of the maritime industry, the Armory Way tunnel alternative is preferred because of its lack of negative impacts to Fishermen's Terminal.

Q: What is the feasibility of identifying 3rd Party funding? And what are the potential sources?
A: Once a more detailed end-to-end cost estimate is developed during Level 3 alternatives screening, Sound Transit will begin to evaluate potential options for 3rd Party funding.

C: Keeping multiple station area options on the table at this point in the process makes sense because further analysis is needed to determine how many people and job centers each station serves, in addition to facilitating multimodal connections.

Downtown, South Lake Union and Seattle Center

- ST3 Representative Project
- 5th/Harrison
- 5th/Terry/Roy/Mercer
- 6th/Boren/Roy

Questions (Q) and comments (C) from ELG members, as well as answers (A) from Sound Transit staff, included the following:

Q: In general, are the lengths of the tunnels the main driver for higher costs?

A: The tunnel portal is the main cost driver in this area. There are also many building tiebacks that could be impacted.

Q: Do the cost comparisons include the additional refinements put forward by the SAG during their October meeting?
A: No. The comparisons are the same as those presented to the SAG in October.

Q: Which alternatives have the least impact on the University of Washington's research facility?
A: Only the representative project impacts the facility.

Q: What are the benefits and tradeoffs of the Seattle Center station area location options?
A: Two major considerations are potential property impacts in the area and the station's proximity to Key Arena. The 5th/Harrison alternative would result in the fewest property impacts.

Q: What are the key differences between the 5th Ave and 6th Ave alignments?
A: They are similar and carrying them both forward into Level 3 screening would allow for additional analysis to determine which is the preferred option.

C: It will be important to ensure a pedestrian-friendly environment around the Seattle Center station, especially for pedestrian crossings of Mercer St and Roy St.

<u>Chinatown-International District</u>

- ST3 Representative Project
- Surface E-3
- Massachusetts Tunnel Portal
- 5th Avenue Mined C-ID
- 4th Avenue Cut-and-Cover C-ID
- 4th Avenue Mined C-ID

Leda Chahim presented the Level 2 evaluation summary from the RET process for the Chinatown-International District area. Key points from her presentation included the following:

- Chinatown-International District alternatives present varying degrees of potential construction impacts, with more proximate potential impacts to property and the right of way along the western edge of this community for 5th Avenue S alternatives, and more potential traffic impacts for the 4th Avenue S alternatives.
- Station access opportunities are better for shallow stations than for deep stations.
- Based on the Level 2 evaluation measures, it is unclear which alternative(s) would pose the greatest net benefit for the unique multicultural communities of color that live in the Chinatown-International District today.
- Inclusive, ongoing engagement is imperative to outcomes that benefit Chinatown-International District communities.
- Construction impacts are a top concern to Chinatown-International District communities.

- Support from the Chinatown-International District and Pioneer Square communities for leveraging a new station to improve connections between transit modes, activate Union Station and improve the existing Chinatown/International District station and plaza.
- Support for continued exploration of both 4th and 5th Avenue South alternatives.
- The user experience and comfort using light rail is fundamental to understanding whether alternatives enhance mobility and access.
- Strong interest in a comprehensive and coordinated cross-agency strategy to address displacement and gentrification in the Chinatown-International District.

Questions (Q) and comments (C) from ELG members, as well as answers (A) from Sound Transit staff, included the following:

C: There is strong community interest in advancing a 4th Ave mined option into Level 3 alternatives screening because of the reduced community impacts.

C: The Chinatown-International District needs additional public engagement. There are a variety of other projects in the area, including the Jackson Hub project, that are identifying ways to improve the pedestrian environment in the neighborhood. Sound Transit should coordinate with those projects and further involve the community to identify which alternatives support the community's vision of itself.

C: Of all the areas along the project corridor, Chinatown-International District needs the most additional work to identify alternatives that benefit the community. There are a lot of very real concerns in the area, including connectivity to Pioneer Square, impacts to the businesses and residents in Chinatown-International District, impacts to the Ryerson Base and building a station facilitates transfers well. All these factors need to be fully studied so the project provides the greatest benefit with the least amount of negative impacts possible.

Q: What was the SAG's rationale for not carrying forward the Surface E-3 and Massachusetts Tunnel Portal alternatives?
A: These alternatives would result in impacts to 5th Ave due to the cut-and-cover tunnel and station.

C: The decision for the Chinatown-International District area needs to take into account the context and history of racism and underrepresentation. Additional resources and time are needed to continue conversations with the community to identify alternatives that meet their needs and address their concerns.

C: There is a long history of public projects in and around Chinatown-International District having negative impacts. Sound Transit should continue to work closely with stakeholders to identify alternatives that benefit the community in the short and long terms.

C: With other regional lines terminating and/or passing through the Chinatown-International District station, there is a need to balance the community needs with providing a station that facilitates transfers well. As such, additional analysis is needed for all the alternatives to not eliminate any options that could meet these needs.

Q: If all the alternatives were studied further, would it be possible for Sound Transit to come back to the ELG with additional analyses to base decisions on?

A: Yes. If all the alternatives are moved forward, Sound Transit would be able to do additional outreach to the Chinatown-International District community and continue analyzing the alternatives. Further discussions will inform what the timeline will be for this additional work.

SODO

- ST3 Representative Project
- Surface E-3
- Massachusetts Tunnel Portal
- Occidental Avenue

Questions (Q) and comments (C) from ELG members, as well as answers (A) from Sound Transit staff, included the following:

C: There is interest in carrying forward the Surface E-3 alternative because of the benefits of having the interim transfer at this location once the West Seattle line opens in 2030.

C: There are strong concerns about the Occidental Ave alternative because of the property impacts and reduced freight mobility.

C: Additional coordination is needed between Sound Transit and King County Metro to flesh out the effect of impacting the Ryerson Base and the potential impacts on regional mobility.

C: The Port of Seattle is open to exploring partnerships that would increase bus base capacity in the area.

C: If the station area options further west in SODO are eliminated, there needs to be additional safe and accessible pedestrian connections throughout the neighborhood.

C: The Ryerson Base is a critical piece of King County Metro's operations in the region.

C: Improved transit connectivity in SODO will be critical if the station is going to adequately serve the business centers along 1st Ave S while providing the critical interim transfer to the existing line.

West Seattle and Duwamish

- ST3 Representative Project
- Pigeon Ridge/West Seattle Tunnel
- Oregon Street/Alaska Junction/Elevated
- Golf Course/Alaska Junction/Tunnel
- Oregon Street/Alaska Junction/Tunnel

Leda Chahim presented the Level 2 evaluation summary from the RET process for the Delridge area. Key points from her presentation included the following:

- Key drivers of differentiation between alternatives with respect to racial and social equity include bus-rail integration, opportunities for equitable development, residential unit displacements and business and commerce effects.
- Alternatives that provide the best transfer environment from other modes would best serve communities of color living further south and reliant on transfers at the Delridge Station.
- Alternatives that result in more predictable redevelopment scenarios provide the highest potential for equitable transit-oriented development.
- Enhancing access to opportunity for communities of color would benefit from experiential improvements and educational efforts, together with increased transit service.
- Equitable development opportunities that benefit communities of color could assist in addressing displacement pressures and providing sorely needed neighborhood amenities.

Questions (Q) and comments (C) from ELG members, as well as answers (A) from Sound Transit staff, included the following:

C: Impacts to the critical areas north of Pigeon Ridge need to be further analyzed to determine if the alignment is feasible in this area, as well as to address the community's concerns.

C: The Pigeon Ridge/West Seattle Tunnel alternative seems to be prohibitively expensive. Given the options to modify the less expensive alternatives to achieve some of the same benefits, the additional cost of the alternative is not justified.

C: Given the amount of critical infrastructure within the Port of Seattle property on Harbor Island, the Port is opposed to a new bridge north of the existing West Seattle Bridge. The impacts would have detrimental impacts to the statewide assets in the area and have widespread consequences during and after construction.

C: Any crossing that is north of the existing West Seattle Bridge would need to be planned in close consultation with the Port of Seattle to manage and avoid negative impacts as much as possible.

C: There is support for moving the Delridge station further south to better accommodate connections to bus routes.

C: The City of Seattle cannot bear the full burden of paying for improvements that are needed around the stations. Additional partnerships and investments will be needed to ensure the project delivers maximum local and regional benefits.

C: The Delridge and Avalon stations need to be constructed close to the densest areas of the respective neighborhoods to facilitate ridership. This consideration must be weighed with minimizing impacts to the Port of Seattle, the environment and the community.

C: The Pigeon Ridge/West Seattle Tunnel alternative should not move forward because of the extremely high cost and substantial tribal impacts.

C: One major disadvantage of the ST3 Representative Project is the east-west orientation of the terminus. The Alaska Junction station should be modified to end in a north-south orientation located on or near 41st Ave SW.

C: To better understand the potential impacts to the Port of Seattle, ELG members and staff should tour the facilities and see what a new bridge north of the existing West Seattle Bridge would have on the Port's operations.

Agenda Item #5 – Review the ELG Recommendations

The ELG made the following recommendations on which Level 2 alternatives should be carried forward into Level 3.

Interbay and Ballard

Alternative	Carry forward?	Comments
ST3 Representative Project		
Central Interbay / Fixed Bridge / 14th	Yes	
Central Interbay / Movable Bridge / 14th	No	
15th / Fixed Bridge / 15th	No	
Armory Way / Tunnel / 14th	Yes	Explore Ballard station access at 15th Ave NW, closer to the center of the urban village.
Central Interbay / Tunnel / 15th	Yes	
20th / Fixed Bridge / 17th	No	
20th / Tunnel / 15th	No	

General discussion:

- Concern with components of the ST3 Representative Project, including a moveable bridge and a station area on 15th Ave NW.

Downtown, South Lake Union and Seattle Center

Alternative	Carry forward	Comments
ST3 Representative Project		
5th / Harrison	Yes	With Seattle Center station located at Republican St.
6th / Boren / Roy	No	
5th / Terry / Roy / Mercer	Yes	With 6th Ave route through Downtown.

General discussion:

- Transfers at the Westlake Station will be critical for regional connectivity.
- Consider pedestrian safety upgrades, especially near Mercer St and the South Lake Union station.

Chinatown-International District

Alternative	Carry forward	Comments
ST3 Representative Project		
Massachusetts Tunnel Portal	Yes	
Surface E-3	No	
4th Avenue Cut-and-Cover C-ID	Yes	
4th Avenue Mined C-ID	Yes	
5th Avenue Mined C-ID	Yes	

General discussion:

- Must recognize the historical context of impacts to the community.
- Need to interact with the community regarding short term vs. long term impacts and benefits.
- Interest in activating Union Station.
- Concern about the effects of displacing Ryerson Base and the effect on bus use of the E-3 busway.
- Concern about a challenging transfer environment and rider experience with deep mined stations.
- Request for additional time to engage the community on potential options.

SODO

Alternative	Carry forward	Comments
ST3 Representative Project		
Massachusetts Tunnel Portal	Yes	
Surface E-3	Yes	
Occidental Avenue	No	

General discussion:

- Need to continue analysis of an interim terminus that avoids the short-term forced transfer at the SODO station, if possible.
- Need improved mobility options in SODO.
- Strong interest in addressing limited bus base capacity in the region.

West Seattle and Duwamish

Alternative	Carry forward	Comments
ST3 Representative Project		
Pigeon Ridge / West Seattle Tunnel	No	
Oregon Street / Alaska Junction / Elevated	No	
Oregon Street / Alaska Junction / Tunnel	No	

Golf Course / Alaska Junction / Tunnel	Yes	Explore Junction Station location at 41st Ave SW/42nd Ave SW. Explore north crossing of Duwamish.

General discussion:

- Interest in a good transfer environment and transit-oriented development opportunities near the Delridge station.
- Concern with the location of a station on Fauntleroy Ave SW because it would not serve the Alaska Junction well and due to its proximity to the Avalon Station.
- Concern about construction impacts on freight mobility with alternatives north of the West Seattle Bridge.
- Adopt the SAG recommendations on modifying the ST3 Representative Project to have a terminus oriented north-south.
- Explore the tradeoffs of a station location on 44th Ave SW.
- Continued interest in an Alaska Junction station near 42nd Ave SW.

Agenda Item #6 – Next Steps

Councilmember Mike O'Brien provided closing remarks, thanking the ELG and SAG, along with the members of the community who have participated in the process. The next Elected Leadership Group meeting will be held in early February where members will receive a community engagement update and learn about the preliminary Level 3 alternatives and screening results.